SONY

3-867-752-**12** (1)

Digital Video Camera Recorder Mini DV Digital Video Cassette

Operating Instructions

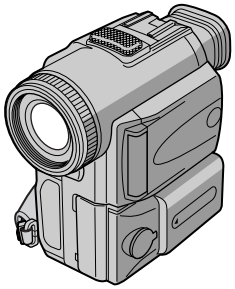
Before operating the unit, please read this manual thoroughly, and retain it for future reference.

Owner's Record

The model and serial numbers are located on the bottom. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. DCR-PC100 Model No. AC-_____

Serial No. _____ Serial No. _____



Digital Handycam

InfoLITHIUM M SERIES

Cassette Memory

MEMORY STICK ™

DCR-PC100

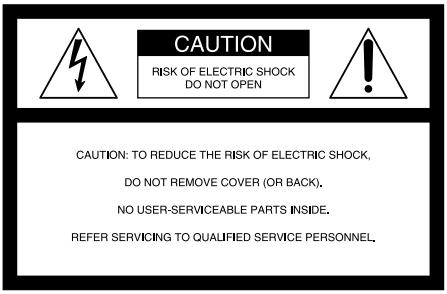
©1999 Sony Corporation

Welcome!

Congratulations on your purchase of this Sony Digital Handycam camcorder. With your Digital Handycam, you can capture life's precious moments with superior picture and sound quality. Your Digital Handycam is loaded with advanced features, but at the same time it is very easy to use. You will soon be producing home video that you can enjoy for years to come.

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Never expose the battery pack to temperatures above 140°F (60°C) such as in a car parked in the sun or under direct sunlight.

For customers in the U.S.A. and CANADA

DISPOSAL OF LITHIUM ION BATTERY.

LITHIUM ION BATTERY. DISPOSE OF PROPERLY.

You can return your unwanted lithium ion batteries to your nearest Sony Service Center or Factory Service Center.

Note: In some areas the disposal of lithium ion batteries in household or business trash may be prohibited.

For the Sony Service Center nearest you call 1-800-222-SONY (United States only).
For the Sony Factory Service Center nearest you call 416-499-SONY (Canada only).

Caution: Do not handle damaged or leaking lithium ion battery.

For the Customers in the U.S.A.

Declaration of Conformity

Trade Name:	SONY
Model No.:	DCR-PC100
Responsible Party:	Sony Electronics Inc.
Address:	1 Sony Drive, Park Ridge, NJ, 07656 USA
Telephone No.:	201-930-6970

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions.: (1) This device may not cause harmful interference, and (2)this device must accept any interference received, including interference that may cause undesired operation.

CAUTION

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Note:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

— Reorient or relocate the receiving antenna.
— Increase the separation between the equipment and receiver.
— Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
— Consult the dealer or an experienced radio/TV technician for help.

For customers in CANADA

CAUTION

TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.

“Memory Stick”

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For customers in CANADA

This Class B digital apparatus complies with Canadian ICES-003.

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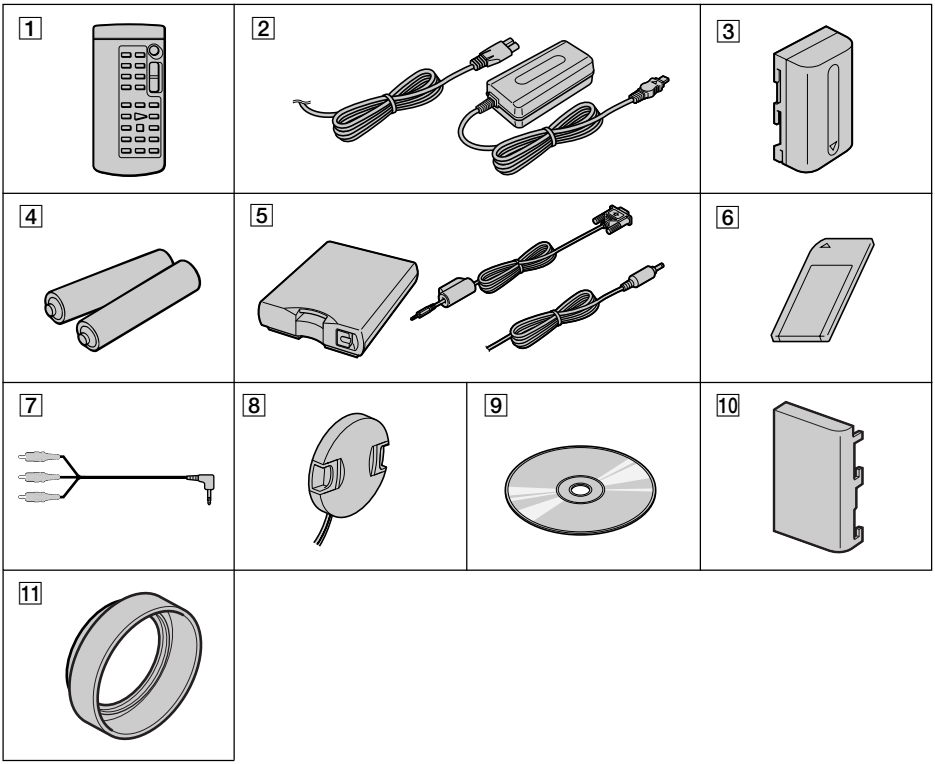
Checking supplied accessories

Make sure that the following accessories are supplied with your camcorder.



1 Wireless Remote Commander (1) (p. 136)

2 AC-L10A/L10B/L10C AC power adaptor (1), Power cord (1) (p. 11)

3 NP-FM50 battery pack (1) (p. 10, 11)

4 Size AA (R6) battery for Remote Commander (2) (p. 137)

5 Serial port adaptor for Memory Stick (1), PC serial cable (1), AC adaptor for Serial port adaptor (1) (p. 105)

6 "Memory Stick" (1) (p. 84)

7 A/V connecting cable (1) (p. 29, 54)

8 Lens cap (1) (p. 15)

9 Application software: PictureGear 3.2Lite (CD ROM) (1) (p. 105)

10 Battery terminal cover (1) (p. 10)

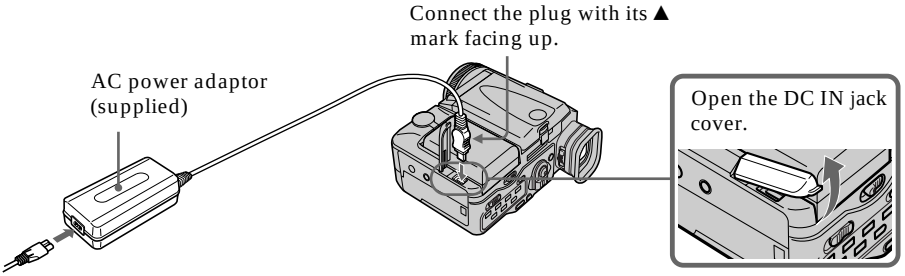
11 Lens hood (1) (p. 18)

Quick Start Guide

This chapter introduces you to the basic features of your camcorder. See the page in parentheses "( )" for more information.

1 Connecting the power cord (p. 13)

Use the battery pack when using your camcorder outdoors (p. 10).



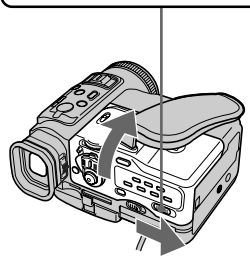
2 Inserting a cassette (p. 14)

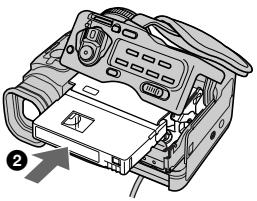
❶ Slide OPEN / ⏏EJECT in the direction of the arrow and open the lid.

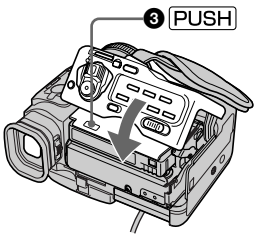
❷ Push the middle portion of the back of the cassette to insert. Insert the cassette in a straight line deeply into the cassette compartment with the window facing out.

❸ Close the cassette compartment by pressing the PUSH mark on the cassette compartment.

❹ After the cassette compartment going down completely, close the lid until it clicks.

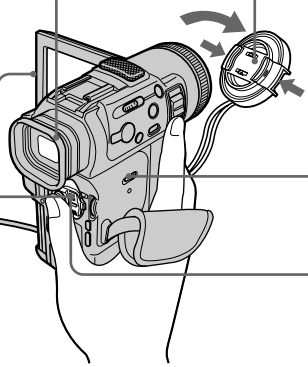






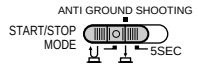
3 Recording a picture (p. 15)

Viewfinder
When the LCD panel is closed, use the viewfinder placing your eye against its eyecup.

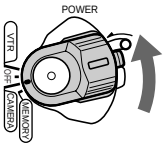


1 Remove the lens cap.

2 Set the START/STOP MODE switch to ⏻.

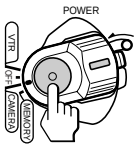


3 Set the POWER switch to CAMERA while pressing the small green button.



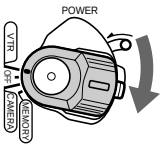
4 Press OPEN to open the LCD panel.

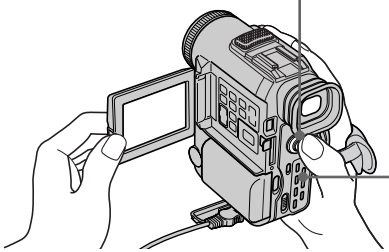
5 Press START/STOP. Your camcorder starts recording. To stop recording, press START/STOP again.



4 Monitoring the playback picture on the LCD screen (p. 25)

1 Set the POWER switch to VTR while pressing the small green button.





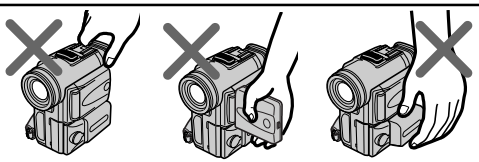
2 Press ◀◀ to rewind the tape.

REW ◀◀

3 Press ▶ to start playback.

PLAY ▷

NOTE
Do not pick up your camcorder by holding the viewfinder, the LCD panel or the battery pack.



Using this manual

As you read through this manual, buttons and settings on your camcorder are shown in capital letters.

e.g. Set the POWER switch to CAMERA.

When you carry out an operation, you can hear a beep or a melody sound to indicate that the operation is being carried out.

Note on Cassette Memory

Your camcorder is based on the DV format. You can only use mini DV cassettes with your camcorder. We recommend that you use a tape with cassette memory CM.

The functions which require different operations depending on whether the tape has the cassette memory or not are:

- End search (p. 24, 28)
- Searching a recording by date – date search (p. 50)
- Photo search (p. 52).

The functions you can operate only with the cassette memory are:

- Searching the boundaries of recorded tape by title – title search (p. 49)
- Superimposing a title (p. 68)
- Making your own titles (p. 72)
- Labeling a cassette (p. 74).

For details, see page 114.

CM only You see this mark in the introduction of the features that are operated only with cassette memory.

Tapes with cassette memory are marked by CM (Cassette Memory).

Note on TV color systems

TV color systems differ from country to country. To view your recordings on a TV, you need an NTSC system-based TV.

Copyright precautions

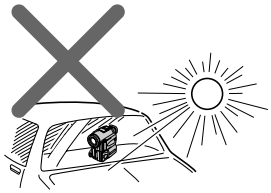
Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

Precautions on camcorder care

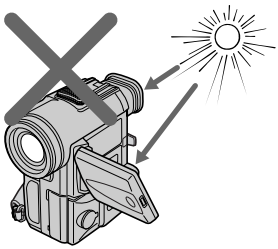
- The LCD screen and/or the color viewfinder are manufactured using high-precision technology. However, there may be some tiny black spots and/or bright spots (red, blue or green in color) that constantly appear on the LCD screen and/or in the color viewfinder. These spots occur normally in the manufacturing process and do not affect the recorded picture in any way. Effective number of pixels is 99.99% or more.
- Do not let your camcorder get wet. Keep your camcorder away from rain and sea water. Letting your camcorder get wet may cause your camcorder to malfunction. Sometimes this malfunction cannot be repaired [a].
- Never leave your camcorder exposed to temperatures above 140°F (60°C), such as in a car parked in the sun or under direct sunlight [b].
- Do not place your camcorder so as to point the viewfinder or the LCD screen toward the sun. The inside of the viewfinder or LCD screen may be damaged [c].

[a]

[b]



[c]



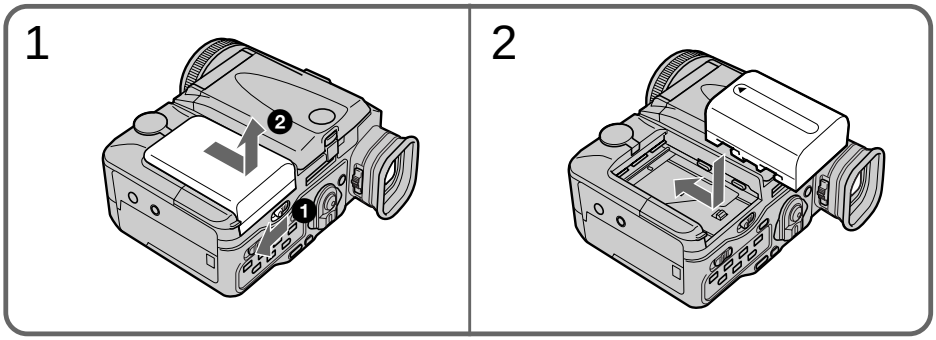
Contents of the recording cannot be compensated if recording or playback is not made due to a malfunction of the camcorder, video tape, etc.

Step 1 Preparing the power supply

Installing the battery pack

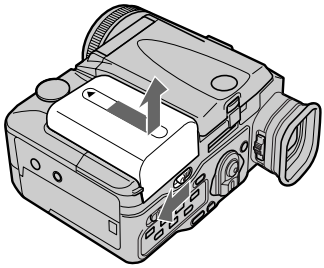
Install the battery pack to use your camcorder outdoors.

(1) While sliding BATT RELEASE in the direction of the arrow ❶, slide the battery terminal cover in the direction of the arrow ❷.
(2) Insert the battery pack in the direction of the arrow.



To remove the battery pack

The battery pack is removed in the same way as the battery terminal cover.



Note on the remaining battery time indicator

The remaining battery time indicator on the LCD screen or in the viewfinder roughly indicates the recording time. The indicator may not be correct, depending on the conditions in which you are recording. When you close the LCD panel and open it again, it takes about one minute for the correct remaining battery time in minutes to be displayed.

Note on the battery terminal cover

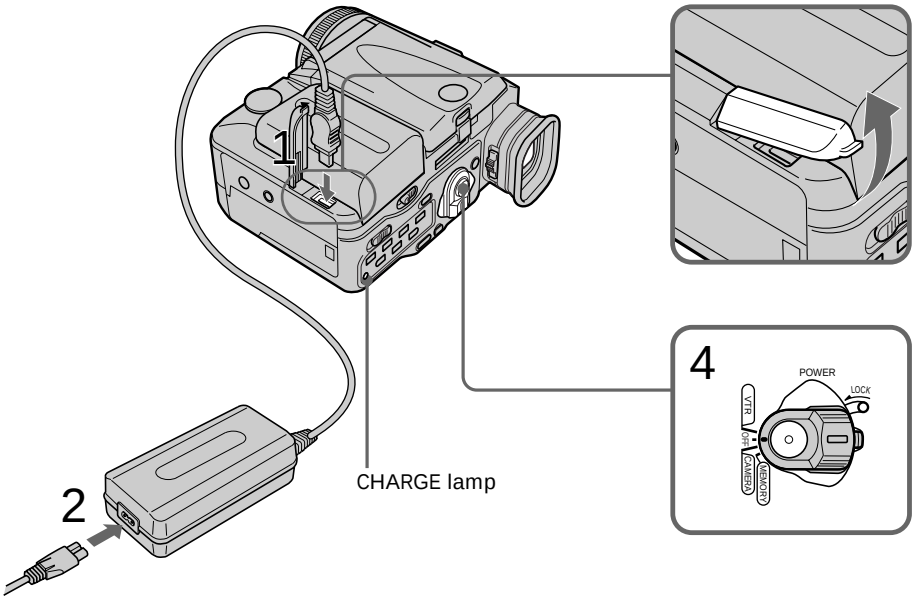
To protect the battery terminals, install the battery terminal cover after the battery pack is removed.

Charging the battery pack

Use the battery pack after charging it for your camcorder.
Your camcorder operates only with the "InfoLITHIUM" battery pack (M series).

(1) Open the DC IN jack cover and connect the AC power adaptor supplied with your camcorder to the DC IN jack with the plug's ▲ mark facing up.
(2) Connect the power cord to the AC power adaptor.
(3) Connect the power cord to a wall outlet.
(4) Set the POWER switch to OFF. The CHARGE lamp (orange) lights up. Charging begins.

When the CHARGE lamp goes out, normal charge is completed. For full charge, which allows you to use the battery longer than usual, leave the battery pack in place for approximately one hour after the CHARGE lamp goes out.



Note

Prevent metallic objects from coming into contact with the metal parts of the DC plug of the AC power adaptor. This may cause a short-circuit, damaging the AC power adaptor.

Charging time

Battery pack	Full charge (Normal charge)
NP-FM50 (supplied)	150 (90)
NP-FM70	240 (180)
NP-FM90	330 (270)

Approximate minutes to charge an empty battery pack

Recording time

Battery pack	Recording with the viewfinder		Recording with the LCD screen	
	Continuous*	Typical**	Continuous*	Typical**
NP-FM50 (supplied)	125 (110)	70 (60)	110 (100)	60 (55)
NP-FM70	265 (235)	150 (135)	230 (210)	130 (120)
NP-FM90	400 (360)	230 (210)	355 (315)	205 (180)

Approximate minutes when you use a fully charged battery

Numbers in parentheses "( )" indicate the time using a normally charged battery.

* Approximate continuous recording time at 77°F (25°C). The battery life will be shorter if you use your camcorder in a cold environment.

** Approximate minutes when recording while you repeat recording start / stop, zooming and turning the power on / off. The actual battery life may be shorter.

Playing time

Battery pack	Playing time on LCD screen	Playing time with LCD closed
NP-FM50 (supplied)	130 (115)	155 (140)
NP-FM70	270 (245)	320 (290)
NP-FM90	410 (370)	490 (440)

Approximate minutes when you use a fully charged battery

Numbers in parentheses "( )" indicate the time using a normally charged battery.
The battery life will be shorter if you use your camcorder in a cold environment.

After charging the battery pack

Disconnect the AC power adaptor from the DC IN jack on your camcorder.

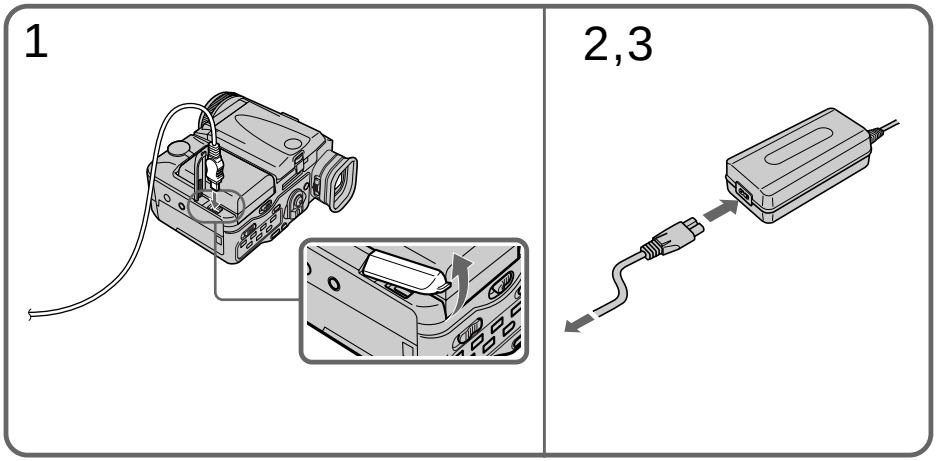
What is "InfoLITHIUM?"

The "InfoLITHIUM" is a lithium ion battery pack which can exchange data with compatible electronic equipment about its battery consumption. Sony recommends that you use the "InfoLITHIUM" battery pack with electronic equipment having the InfoLITHIUM mark.

Connecting to a wall outlet

When you use your camcorder for a long time, we recommend that you power it from a wall outlet using the AC power adaptor.

(1) Open the DC IN jack cover, pulling the cover out a little. Connect the AC power adaptor to the DC IN jack on your camcorder with the plug's ▲ mark facing up.
(2) Connect the power cord to the AC power adaptor.
(3) Connect the power cord to a wall outlet.



Notes

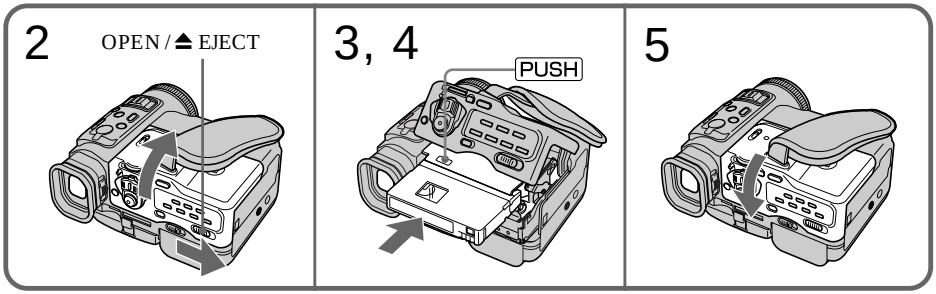
- The power cord must only be changed at an authorized service shop.
- The set is not disconnected from the AC power source (house current) as long as it is connected to the wall outlet, even if the set itself has been turned off.
- AC power adaptor can supply power even if the battery pack is attached to your camcorder.
- The DC IN jack has "source priority." This means that the battery pack cannot supply any power if the power cord is connected to the DC IN jack, even when the power cord is not plugged into a wall outlet.

Using a car battery

Use Sony DC Adaptor / Charger (not supplied).

Step 2 Inserting a cassette

(1) Install the power source.
(2) Slide OPEN / ⏏EJECT in the direction of the arrow and open the lid. The cassette compartment automatically lifts up and opens.
(3) Push the middle portion of the back of the cassette to insert.
Insert the cassette in a straight line deeply into the cassette compartment with the window facing out.
(4) Close the cassette compartment by pressing the PUSH mark on the cassette compartment. The cassette compartment automatically goes down.
(5) After the cassette compartment going down completely, close the lid until it clicks.



To eject a cassette

Follow the procedure above, and take out the cassette in step 3.

Notes

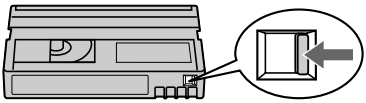
- Do not press the cassette compartment down firmly. Doing so may cause malfunction.
- The cassette compartment may not be closed when you press any part of the lid other than the PUSH mark.

When you use mini DV cassette with cassette memory

Read the instruction about cassette memory to use this function properly (p. 114).

To prevent accidental erasure

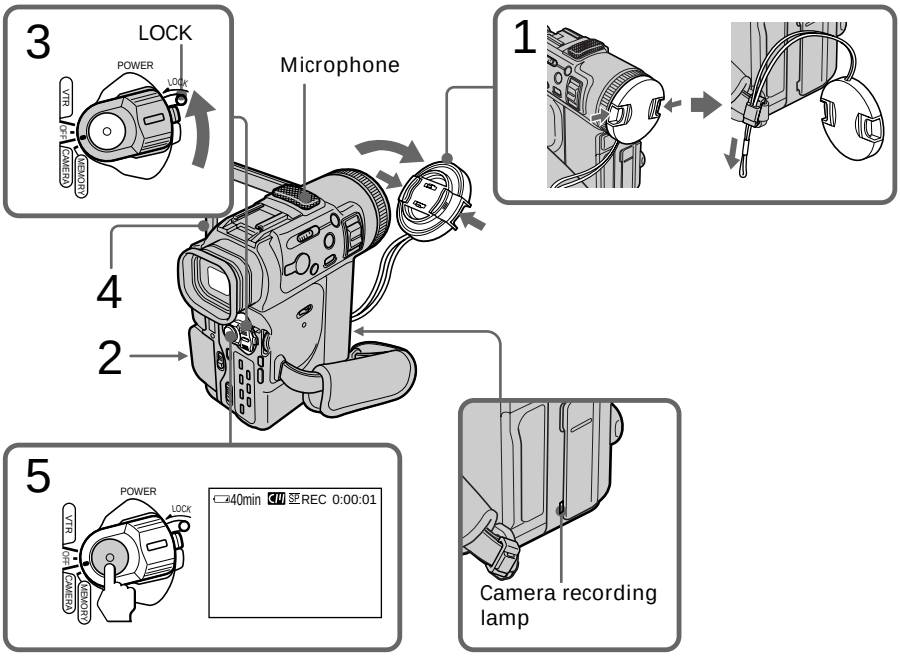
Slide the write-protect tab on the cassette to expose the red mark.



Recording a picture

Your camcorder automatically focuses for you.

(1) Remove the lens cap and pull the lens cap string to fix it.
(2) Install the power source and insert a cassette. See “Step 1” and “Step 2” for more information (p. 10 to p. 14).
(3) Set the POWER switch to CAMERA while pressing the small green button. Your camcorder is set to the standby mode.
(4) Press OPEN to open the LCD panel.
(5) Press START/STOP. Your camcorder starts recording. The “REC” indicator appears. The camera recording lamp located on the front of your camcorder lights up. To stop recording, press START/STOP again.



Note

Fasten the grip strap firmly. Do not touch the built-in microphone during recording.

Note on Recording mode

Your camcorder records and plays back in the SP (standard play) mode and in the LP (long play) mode. Select SP or LP in the menu settings. In the LP mode, you can record 1.5 times as long as in the SP mode.
When you record a tape in the LP mode on your camcorder, we recommend playing the tape on your camcorder.

Note on the LOCK switch

When you slide the LOCK switch to the left, the POWER switch can no longer be set to MEMORY accidentally. The LOCK switch is set to the right as a default setting.

To enable smooth transition

Transition between the last scene you recorded and the next scene is smooth as long as you do not eject the cassette even if you turn off your camcorder.
However, check the following:

- When you change the battery pack, set the POWER switch to OFF.
- Do not mix recordings in the SP mode and ones in the LP mode on one tape.

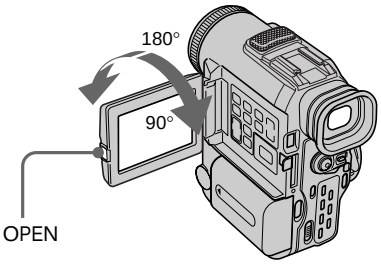
When you use a tape with cassette memory, however, you can make the transition smooth even after ejecting the cassette if you use the END SEARCH function (p. 24).

If you leave your camcorder in the standby mode for five minutes while the cassette is inserted

Your camcorder automatically turns off. This is to save battery power and to prevent battery and tape wear. To resume the standby mode, set the POWER switch to OFF, and to CAMERA again.
When a cassette is not inserted, your camcorder does not turn off.

Adjusting the LCD screen

The LCD panel rotates about 90 degrees to the viewfinder side and about 180 degrees to the lens side.
If you turn the LCD panel over so that it faces the other way, the ☺ indicator appears on the LCD screen and in the viewfinder (Mirror mode).



To close the LCD panel, set it vertically until it clicks, and swing it into the camcorder body.

Note

When using the LCD screen except in the mirror mode, the viewfinder automatically turns off.

When you use the LCD screen outdoors in direct sunlight

The LCD screen may be difficult to see. If this happens, we recommend that you use the viewfinder.

When you adjust angles of the LCD panel

Make sure if the LCD panel is opened up to 90 degrees.

Picture in the mirror mode

The picture on the LCD screen is a mirror-image. However, the picture will be normal when recorded.

During recording in the mirror mode

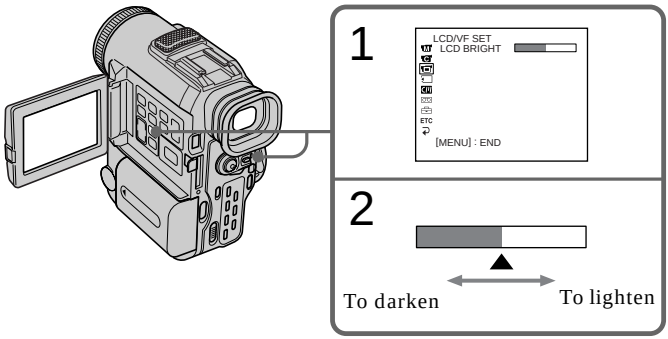
ZERO SET MEMORY on the Remote Commander does not work.

Indicators in the mirror mode

The STBY indicator appears as ❚❚● and REC as ●. Some of the other indicators appear mirror-reversed and others are not displayed.

Adjusting the brightness of the LCD screen

(1) In the standby / recording / memory mode, select LCD BRIGHT in in the menu settings. The bar indicator appears.
(2) Turn the SEL / PUSH EXEC dial to adjust the brightness of the LCD screen, then press the dial.



LCD screen backlight

You can change the brightness of the backlight. Select LCD B.L. in the menu settings (p. 76).

Even if you adjust the LCD screen backlight or brightness of the LCD screen

The recorded picture will not be affected.

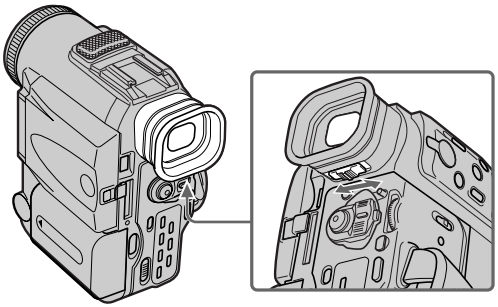
After recording

(1) Set the POWER switch to OFF.
(2) Close the LCD panel.
(3) Eject the cassette.
(4) Remove the battery pack.
(5) Attach the battery terminal cover.

Adjusting the viewfinder

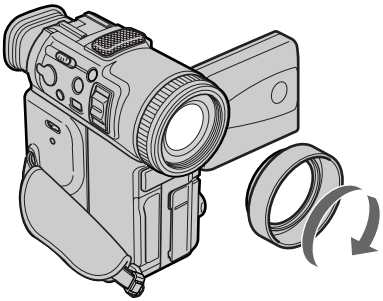
If you record pictures with the LCD panel closed, check the picture with the viewfinder. Adjust the viewfinder lens to your eyesight so that the indicators in the viewfinder come into sharp focus.

Move the viewfinder lens adjustment lever.



Attaching the supplied lens hood

To record fine pictures under strong light, we recommend you to attach the lens hood. You can also attach the lens cap when using the lens hood.



Detach the lens hood when:

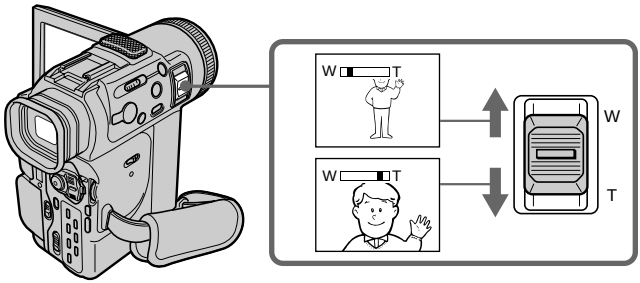
- You cannot shoot with the Remote Commander. In this case, the lens hood may block the infrared ray emitted from the Remote Commander.
- You will attach a filter (not supplied).

When you attach a filter (not supplied)

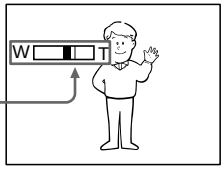
The four corners of the screen may be eclipsed by the lens hood.

Using the zoom feature

Move the power zoom lever a little for a slower zoom. Move it further for a faster zoom. Using the zoom function sparingly results in better-looking recordings.
"T" side: for telephoto (subject appears closer)
"W" side: for wide-angle (subject appears farther away)



Zoom greater than 10× is performed digitally, if you set D ZOOM to ON in the menu settings. The digital zoom function is set to OFF as a default setting (p. 76).



The right-ended portion of the bar shows the digital zooming zone.
The digital zooming zone appears when you set D ZOOM to ON.

When you shoot close to a subject

If you cannot get a sharp focus, move the power zoom lever to the "W" side until the focus is sharp. You can shoot a subject that is at least about 2 feet 5/8 inch (about 80 cm) away from the lens surface in the telephoto position, or about 1/2 inch (about 1 cm) away in the wide-angle position.

Notes on digital zoom

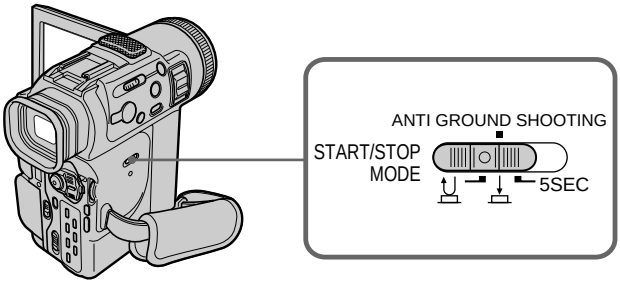
- Digital zoom starts to function when zoom exceeds 10×.
- The picture quality deteriorates as you move the power zoom lever toward the "T" side.
- You cannot use the digital zoom when the POWER switch is set to MEMORY.

START/STOP MODE setting

: Recording starts when you press START/STOP, and stops when you press it again (default setting).

ANTI GROUND SHOOTING : Your camcorder records only while you press START/STOP. Use this mode to avoid recording unnecessary scenes.

5SEC: When you press START/STOP, your camcorder records for five seconds and then stops automatically.



Notes

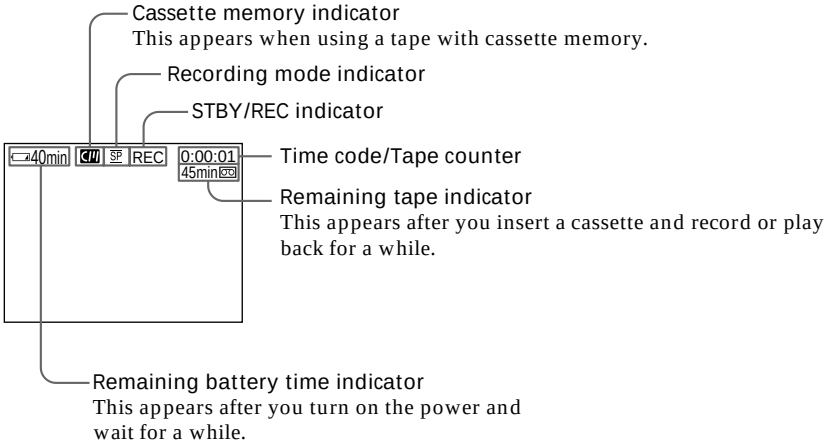
- You cannot use the fader function in the 5SEC or mode.
- The time code does not appear in the 5SEC mode.

To extend the recording time in the 5SEC mode

Five dots (●●●●●) appear, and then disappear at a rate of one per second. To extend the recording time, press START/STOP again before all the dots disappear. Recording continues for about five seconds from the moment you press START/STOP.

Indicators displayed in the recording mode

The indicators are not recorded on tapes.



Time code

The time code indicates the recording or playback time, “0:00:00” (hours : minutes : seconds) in CAMERA mode and “0:00:00:00” (hours : minutes : seconds : frames) in VTR mode. You cannot rewrite only the time code.

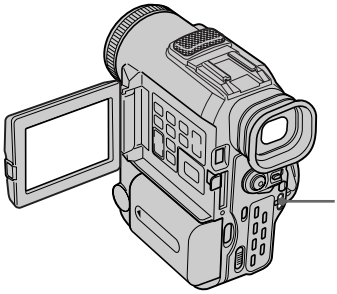
Remaining tape indicator

The indicator may not be displayed accurately depending on the tape.

Shooting backlit subjects (BACK LIGHT)

When you shoot a subject with the light source behind the subject or a subject with a light background, use the backlight function.

Press BACK LIGHT in the recording , standby, or memory mode.
The indicator appears on the LCD screen or in the viewfinder.
To cancel, press BACK LIGHT again.



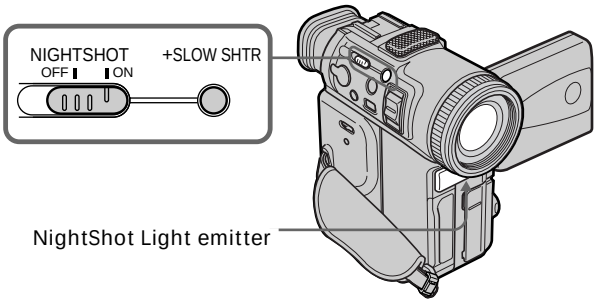
If you press EXPOSURE when shooting backlit subjects

The backlight function will be canceled (p. 44).

Shooting in the dark (NightShot)

The NightShot function enables you to shoot a subject in a dark place. For example, you can satisfactorily record the environment of nocturnal animals for observation when you use this function.

While your camcorder is in the standby or memory mode, slide NIGHTSHOT to ON. ⊙ and "NIGHTSHOT" indicators flash on the LCD screen or in the viewfinder. To cancel the NightShot function, slide NIGHTSHOT to OFF.



Using +SLOW SHTR

The NightShot +Slow shutter mode makes subjects more than four times brighter than those recorded in the NightShot mode.

(1) Slide NIGHTSHOT to ON in the standby mode. ⊙ indicator appears on the LCD screen or in the viewfinder.
(2) Press +SLOW SHTR repeatedly until the desired NIGHTSHOT indicator flashes.
The indicator changes as follows:
⊙ (NIGHTSHOT) → ⊙1 (NIGHTSHOT1) → ⊙2 (NIGHTSHOT2) → ⊙ (NIGHTSHOT)
To cancel the NightShot +Slow shutter mode, slide NIGHTSHOT to OFF.

Using the NightShot Light

The picture will be clearer with the NightShot Light on. To enable NightShot Light, set N.S. LIGHT to ON in the menu settings (p. 76).

Notes

- Do not use the NightShot function in bright places (ex. the outdoors in the daytime). This may cause your camcorder to malfunction.
- When you keep NIGHTSHOT set to ON in normal recording, the picture may be recorded in incorrect or unnatural colors.
- If autofocusing is difficult when using the NightShot function, focus manually.
- Do not cover the NightShot Light emitter when using the NightShot function.
- Detach the lens hood when you shoot with the NightShot Light. Since the lens hood may block the NightShot Light.

While using the NightShot function, you cannot use the following functions:
– Exposure
– PROGRAM AE
– White balance
– Fader*
– Digital effect*

* You cannot use these functions only in the NightShot +Slow shutter mode.

Shutter speed in the NightShot +Slow shutter mode

Indicator	Shutter speed
1 (NIGHTSHOT1)	1/15
2 (NIGHTSHOT2)	1/4

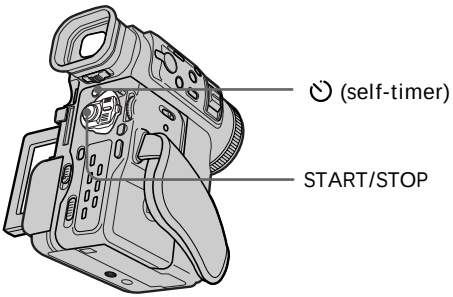
The +SLOW SHTR button does not work:
– While the fader function is set or in use.
– While the digital effect function is in use.
– When NIGHTSHOT is set to OFF.
– When the POWER switch is set to MEMORY.

NightShot Light
NightShot Light rays are infrared and so are invisible. The maximum shooting distance using the NightShot Light is about 10 feet (3 m). The shooting distance will be twice or more in the NightShot +Slow shutter mode.

Self-timer recording

You can make a recording with the self-timer. This mode is useful when you want to record yourself.

(1) Press (self-timer) in the standby mode. The (self-timer) indicator appears on the LCD screen or in the viewfinder.
(2) Press START/STOP.
Self-timer starts counting down from 10 with a beep sound. In the last two seconds of the countdown, the beep sound gets faster, then recording starts automatically.



To stop the self-timer before recording

Press START/STOP again.
Use the Remote Commander for convenience.

To record still pictures on tapes using the self-timer

Press PHOTO in step 2 (p. 32).

To record still pictures on "Memory Stick"s

Press ⏲ (self-timer), then press PHOTO in MEMORY mode (p. 94).

To cancel self-timer recording

Press ⏲ (self-timer) so that the ⏲ indicator disappears from the LCD or viewfinder screen while your camcorder is in the standby mode.

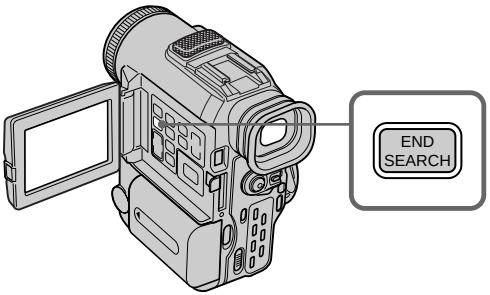
Note

The self-timer recording mode is automatically canceled when:
– Self-timer recording is finished.
– The POWER switch is set to OFF or VTR.

END SEARCH

You can go to the end of the recorded portion after you record.

In the standby mode, press END SEARCH.
The last five seconds of the recorded portion are played back and playback stops. You can monitor the sound from the speaker or headphones.



To stop searching

Press END SEARCH again.

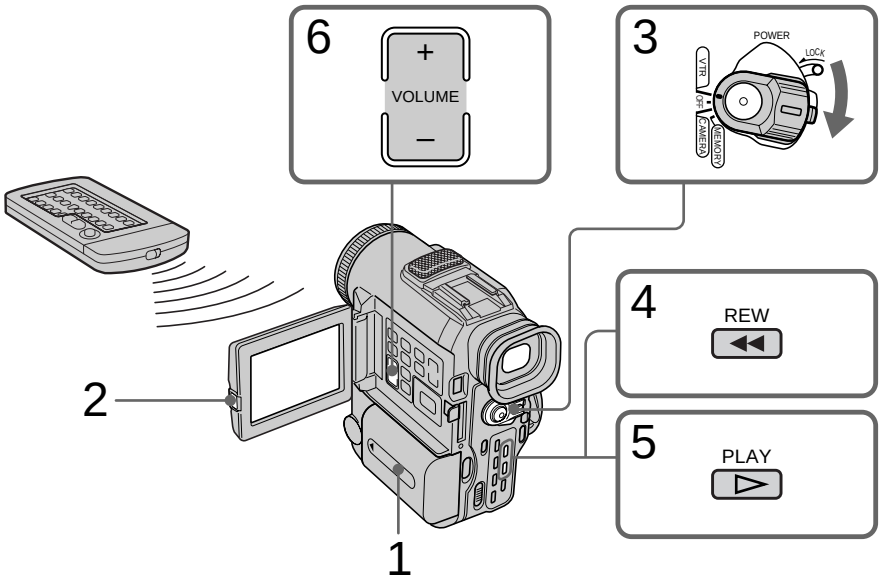
End search function

When you use a tape without cassette memory, the end search function does not work once you eject the cassette after you have recorded on the tape. If you use a tape with cassette memory, the end search function works even once you eject the cassette.
If there is a blank portion at the beginning or between the recorded portions, the end search function may not work correctly (p. 114).

Playing back a tape

You can monitor the playback picture on the LCD screen. If you close the LCD panel, you can monitor the playback picture in the viewfinder. You can control playback using the Remote Commander supplied with your camcorder.

(1) Install the power source and insert the recorded tape.
(2) Press OPEN to open the LCD panel.
(3) Set the POWER switch to VTR while pressing the small green button. The video control buttons light up.
(4) Press ◀◀ to rewind the tape.
(5) Press ▶ to start playback.
(6) To adjust the volume, press either of the two buttons on VOLUME.

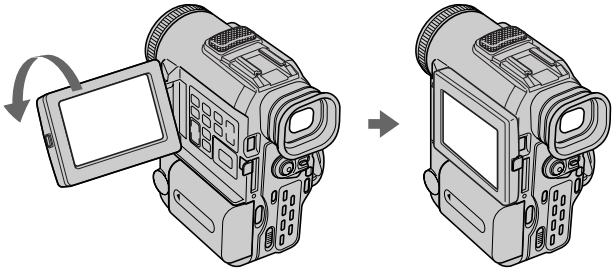


To stop playback

Press ■.

When monitoring on the LCD screen

You can turn the LCD panel over and move it back to the camcorder body with the LCD screen facing out.



If you leave the power on for a long time

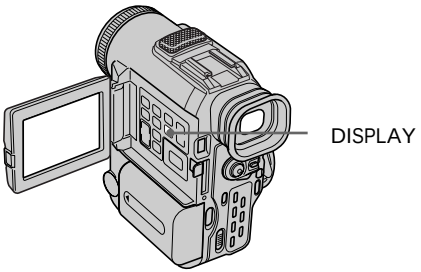
Your camcorder gets warm. This is not a malfunction.

When you open/close the LCD panel

Make sure that the LCD panel is set vertically.

To control the display of the screen indicators

Press DISPLAY on your camcorder or on the Remote Commander supplied with your camcorder.
The indicators disappear from the LCD screen.
To make the indicators appear, press DISPLAY again.

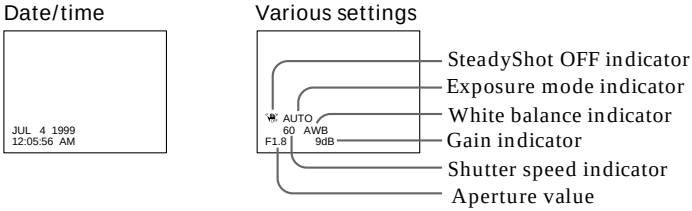


Using the data code function

Your camcorder automatically records not only images on the tape but also the recording data (date / time or various settings when recorded) (Data code).
You can only operate with the Remote Commander.

Press DATA CODE on the Remote Commander in the playback mode.

The display changes as follows:
date / time → various settings (SteadyShot, white balance, gain, shutter speed, aperture value, exposure mode) → no indicator



Not to display various settings

Set DATA CODE to DATE in the menu settings (p. 76).
The display changes as follows:
date / time ↔ no indicator

Recording data

Recording data is your camcorder's information when you have recorded. In the recording mode, the recording data will not be displayed.

When you use the data code function, bars (-- -- --) appear if:

- A blank portion of the tape is being played back.
- The tape is unreadable due to tape damage or noise.
- The tape was recorded by a camcorder without the date and time set.

Data code

When you connect your camcorder to the TV, the data code also appears on the TV screen (p. 29).

Note on the date/time indicator

Recording date / time is not displayed during shooting, however, it is automatically recorded on the tape. You can check the recording date / time while in playback mode by pressing DATA CODE on the Remote Commander.

Various playback modes

To operate video control buttons, set the POWER switch to VTR.

To view a still picture (playback pause)

Press ❚❚ during playback. To resume normal playback, press ► or ❚❚.

To advance the tape

Press ►► in the stop mode. To resume normal playback, press ►.

To rewind the tape

Press ◄◄ in the stop mode. To resume normal playback, press ►.

To change the playback direction

Press < on the Remote Commander during playback to reverse the playback direction. To resume normal playback, press ►.

To locate a scene monitoring the picture (picture search)

Keep pressing ◄◄ or ►► during playback. To resume normal playback, release the button.

To monitor the high-speed picture while advancing or rewinding the tape (skip scan)

Keep pressing ◄◄ while rewinding or ►► while advancing the tape. To resume rewinding or advancing, release the button.

To view the picture at slow speed (slow playback)

Press ❚► on the Remote Commander during playback. For slow playback in the reverse direction, press <, then press ❚► on the Remote Commander. To resume normal playback, press ►.

To view the picture at double speed

Press ×2 on the Remote Commander during playback. For double speed playback in the reverse direction, press <, then press ×2 on the Remote Commander. To resume normal playback, press ►.

To view the picture frame-by-frame

Press ❚❚► on the Remote Commander in the playback pause mode. For frame-by-frame playback in the reverse direction, press ◄❚❚. To resume normal playback, press ►.

To search the last scene recorded (END SEARCH)

Press END SEARCH in the stop mode. The last five seconds of the recorded portion plays back and stops.

End Search

When you use a tape without cassette memory, the end search function does not work once you eject the cassette after you have recorded on the tape.
When you use a tape with cassette memory, the end search function works even once you eject the cassette.

In the various playback modes

Sound is muted.

When the playback pause mode lasts for five minutes

Your camcorder automatically enters the stop mode. To resume playback, press ►.

Slow playback

The slow playback can be performed smoothly on your camcorder: however, this function does not work for an output signal through the i.LINK DV IN / OUT jack.

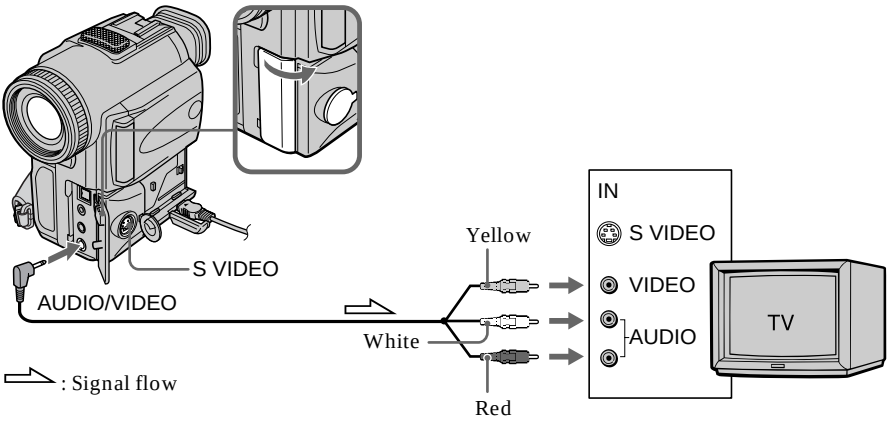
When you play back a tape in reverse

Horizontal noise may appear at the center, or the top and bottom of the screen. This is not a malfunction.

Viewing the recording on TV

Connect your camcorder to your TV or VCR with the A/V connecting cable supplied with your camcorder to watch the playback picture on the TV screen. You can operate the video control buttons in the same way as when you monitor playback pictures on the LCD screen. When monitoring the playback picture on the TV screen, we recommend that you power your camcorder from a wall outlet using the AC power adaptor (p. 13). Refer to the operating instructions of your TV or VCR.

Open the jack cover. Connect your camcorder to the TV using the A/V connecting cable supplied with your camcorder. Then, set the TV/VCR selector on the TV to VCR.



If your TV is already connected to a VCR

Connect your camcorder to the LINE IN input on the VCR by using the A/V connecting cable supplied with your camcorder. Set the input selector on the VCR to LINE.

If your TV or VCR is a monaural type

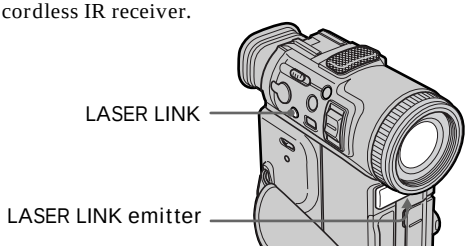
Connect the yellow plug of the A/V connecting cable to the video input jack and the white or the red plug to the audio input jack on the VCR or the TV. If you connect the white plug, the sound is L (left) signal. If you connect the red plug, the sound is R (right) signal.

If your TV or VCR has an S video jack

Connect using an S video cable (not supplied) to obtain high-quality pictures. With this connection, you do not need to connect the yellow (video) plug of the A/V connecting cable.
Connect the S video cable (not supplied) to the S video jacks on both your camcorder and the TV or the VCR.
This connection produces higher quality DV format pictures.

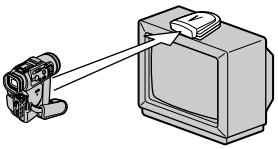
Using the AV cordless IR receiver

Once you connect the AV cordless IR receiver (not supplied) to your TV or VCR, you can easily view the picture on your TV. For details, refer to the operating instructions of the AV cordless IR receiver.



Insert the recorded cassette into your camcorder.

(1) After connecting your TV and AV cordless IR receiver, set the POWER switch on the AV cordless IR receiver to ON.
(2) Turn the TV on and set the TV/VCR selector on the TV to VCR.
(3) Set the POWER switch to VTR on your camcorder.
(4) Press LASER LINK. The lamp of LASER LINK lights up.
(5) Press ► on your camcorder to start playback.
(6) Point the LASER LINK emitter at the AV cordless IR receiver. Adjust the position of your camcorder and the AV cordless IR receiver to obtain clear playback pictures.



To cancel the laser link function

Press LASER LINK. The lamp on the LASER LINK button goes out.

If you use a Sony TV

- You can turn on the TV automatically when you press LASER LINK. You need to do following prepartions beforehand:
  – Turn the TV's main switch on.
  – Set AUTO TV ON to ON in the menu settings.
  – Point the LASER LINK emitter at the TV's remote sensor.
- You can switch the video input of the TV automatically to the one which the AV cordless IR receiver is connected. To do so, set AUTO TV ON to ON and TV INPUT to the same video input (1, 2, 3) in the menu settings. With some models, however, the picture and sound may be disconnected momentarily when the video input is switched.
- The above feature may not work on some TV models.

Notes

- When laser link is activated (the LASER LINK button is lit), your camcorder consumes power. Press LASER LINK to turn off the laser link function when it is not needed.
- When you attach the lens hood, the lens hood may block the infrared ray depending on the positions of the camcorder and the IR receiver. In this case, detach the lens hood.

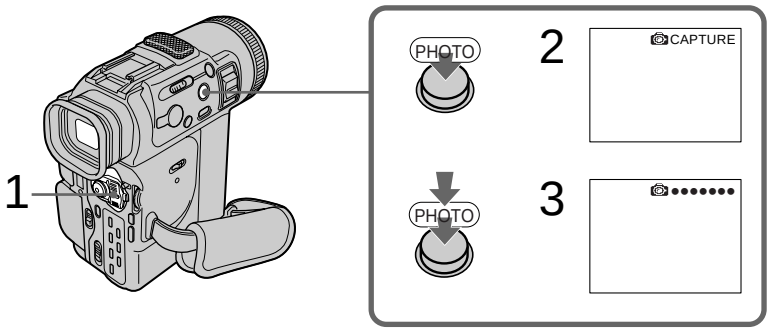
If you turn the power off

Laser link turns off automatically.

Recording a still image on a tape – Tape photo recording

You can record a still picture. This mode is useful when you want to record a picture or when you print a picture using a video printer (not supplied).
You can record about 510 pictures in the SP mode and about 765 pictures in the LP mode on a 60-minute tape.
Besides the operation described here, your camcorder can record still pictures on "Memory Stick"s (p. 91).

(1) Set the POWER switch to CAMERA.
(2) In the standby mode, keep pressing PHOTO lightly until a still picture appears. The CAPTURE indicator appears. Recording does not start yet.
To change the still picture, release PHOTO, select a still picture again, and then press and hold PHOTO lightly.
(3) Press PHOTO deeper.
The still picture on the LCD screen or in the viewfinder is recorded for about seven seconds. The sound during those seven seconds is also recorded.
The still image is displayed on the LCD screen or in the viewfinder until recording is completed.



Notes

• During photo recording, you cannot change the mode or setting.
• The photo recording function does not work:
– While the fader function is set or in use.
– While the digital effect function is set or in use.

To use the photo recording function using the Remote Commander

Press PHOTO on the Remote Commander. Your camcorder records a picture on the LCD screen or in the viewfinder immediately.

To use the photo recording function during normal CAMERA recording

You cannot check an image on the LCD screen or in the viewfinder by pressing PHOTO lightly. Press PHOTO deeper. The still picture is then recorded for about seven seconds and your camcorder returns to the standby mode.

If you record a moving subject with photo recording function

When you play back the still picture on other equipment, the picture may fluctuate.

To record clear and less fluctuated still pictures

We recommend that you record on "Memory Stick"s.

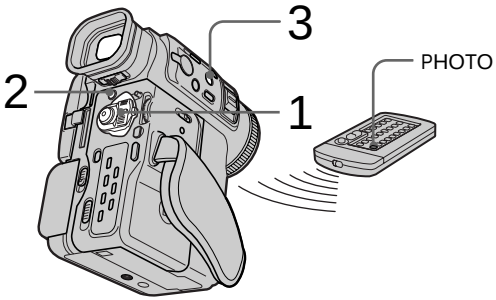
Self-timer photo recording

You can make a photo recording with the self-timer. This mode is useful when you want to record yourself.

(1) Set the POWER switch to CAMERA.

(2) Press ⏲ (self-timer). The ⏲ (self-timer) indicator appears on the LCD screen or in the viewfinder.

(3) Press PHOTO.
Self-timer starts counting down from 10 with a beep sound. In the last two seconds of the countdown, the beep sound gets faster, then recording starts automatically.



To cancel self-timer recording

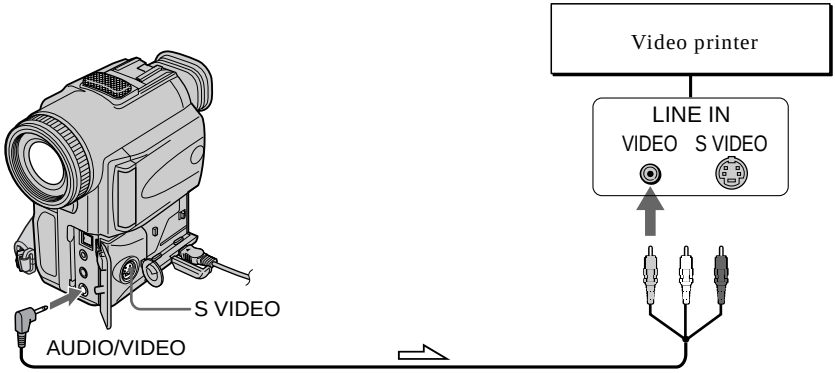
Press ⏲ (self-timer) so that the ⏲ indicator disappears from the LCD or viewfinder screen while your camcorder is in the standby mode. You cannot cancel the self-timer recording using the Remote Commander.

Note

The self-timer recording mode is automatically canceled when:
– Self-timer recording is finished.
– The POWER switch is set to OFF or VTR.

Printing the still picture

You can print a still picture by using the video printer (not supplied). Connect the video printer using the A / V connecting cable supplied with your camcorder.
Connect it to the AUDIO / VIDEO jack and connect the yellow plug of the cable to the video input of the video printer. Refer to the operating instructions of the video printer as well.



: Signal flow

If the video printer is equipped with S video input
Use the S video connecting cable (not supplied). Connect it to the S VIDEO jack and the S video input of the video printer.

Adjusting the white balance manually

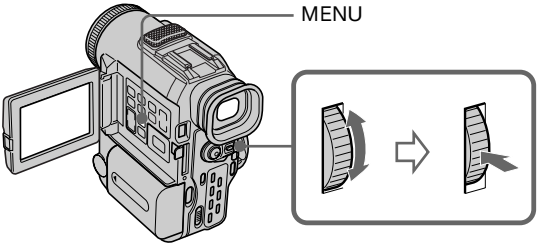
You can manually adjust and set the white balance. This adjustment makes white subjects look white and allows more natural color balance. Normally white balance is automatically adjusted.

In the standby / recording / memory mode, select a desired white balance mode in the menu settings (p. 76).

☼ (INDOOR) :
• Lighting condition changes quickly
• Too bright place such as photography studios
• Under sodium lamps or mercury lamps

☀ (OUTDOOR) :
• Recording a sunset / sunrise, just after sunset, just before sunrise, neon signs, or fireworks
• Under a color matching fluorescent lamp

HOLD :
Recording a single-colored subject or background



To return to the automatic white balance mode

Set WHT BAL to AUTO in the menu settings (p. 76).

If the picture is being taken in a studio lit by TV lighting

We recommend that you record in the ☼ indoor mode.

When you record under fluorescent lighting

Use the automatic white balance or hold mode.
Your camcorder may not adjust the white balance correctly in the ☼ indoor mode.

In the automatic white balance mode

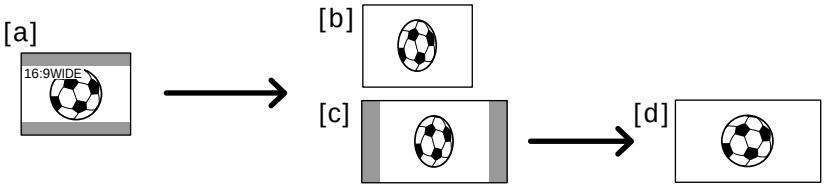
Point your camcorder at a white subject for about 10 seconds after setting the POWER switch to CAMERA to get a better adjustment when:
• You detach the battery for replacement.
• You bring your camcorder to the outdoors from the interior of a house, or vice versa.

In the hold white balance mode

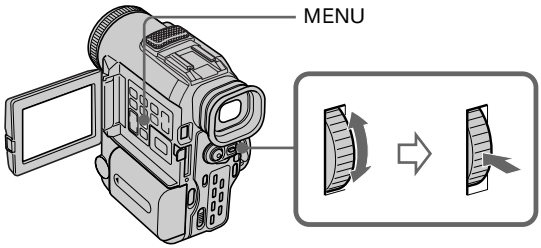
Set the white balance to AUTO and reset to HOLD after a few seconds when:
• You change the PROGRAM AE mode.
• You bring your camcorder to the outdoors from the interior of a house, or vice versa.

Using the wide mode

You can record a 16:9 wide picture to watch on the 16:9 wide-screen TV (16:9WIDE). Black bands appear on the screen during recording in 16:9WIDE mode [a]. The picture during a playback on a normal TV [b] or on a wide-screen TV [c] is compressed in the widthwise direction. If you set the screen mode of the wide-screen TV to the full mode, you can watch pictures of normal images [d].



In the standby mode, set 16:9WIDE to ON in in the menu settings (p. 76).



To cancel the wide mode

Set 16:9WIDE to OFF in the menu settings (p. 76).

In the wide mode

You cannot select the old movie mode with DIGITAL EFFECT.

During recording

You cannot select or cancel the wide mode. When you cancel the wide mode, set your camcorder to the standby mode and then set 16:9WIDE to OFF in the menu settings.

Connection for a TV

Pictures recorded in the 16:9WIDE mode automatically appear on the TV screen at full size when you connect your camcorder to a TV that is compatible with the video ID (ID-1/ID-2) system.

ID-1 system

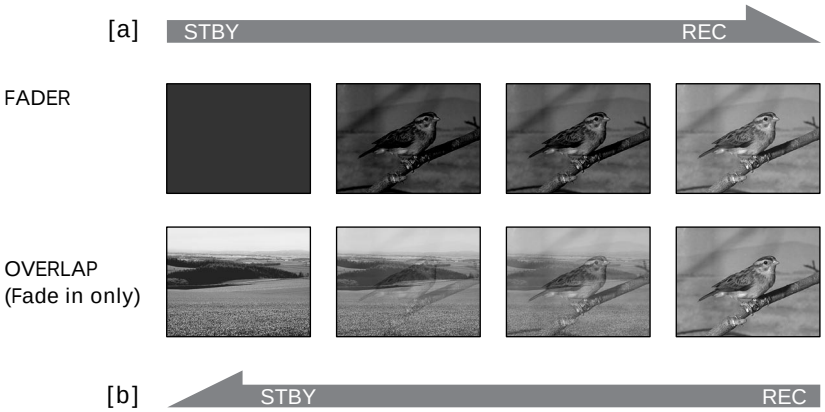
The ID-1 system sends aspect ratio information (16:9, 4:3, or letter box) with video signals. If you connect a TV compatible with the ID-1 system, the screen size is automatically selected.

ID-2 system

The ID-2 system sends a copyright protection signal with ID-1 signals inserted between video signals when you connect your camcorder to other equipment using an A/V connecting cable.

Using the fader function

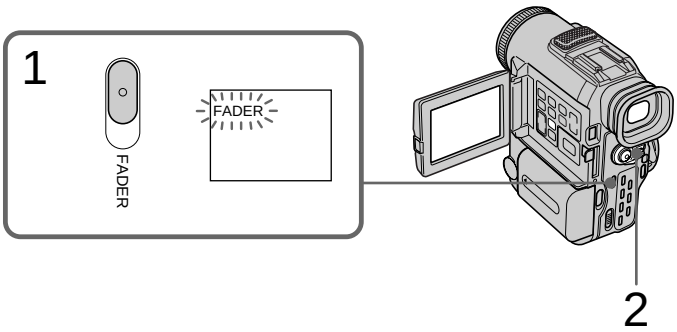
You can fade in or out to give your recording a professional appearance.



MONOTONE
When fading in, the picture gradually changes from black-and-white to color.
When fading out the picture gradually changes from color to black-and-white.

(1) When fading in [a]
In the standby mode, press FADER until the desired fader indicator flashes.
When fading out [b]
In the recording mode, press FADER until the desired fader indicator flashes.
The indicator changes as follows:
FADER→MONOTONE→OVERLAP→no indicator
The last selected fader mode is indicated first of all.

(2) Press START/STOP. After the fade in/out is carried out, your camcorder automatically returns to the normal mode.



To cancel the fader function

After the fade in/out is carried out : Your camcorder automatically returns to the normal mode.
Before the fade in/out is carried out : Before pressing START/STOP, press FADER until the indicator disappears.

Note

You cannot use the following functions while using the fader function. Also, you cannot use the fader function while using the following functions.

– Digital effect
– Low lux mode of PROGRAM AE (Overlap function only)
– NightShot +Slow shutter
– Photo recording

When the OVERLAP indicator appears

Your camcorder automatically stores the image recorded on a tape. As the image is being stored, the OVERLAP indicator flashes fast, and the playback picture is displayed.
At this stage, the picture may not be recorded clearly, depending on the tape condition.

When START/STOP MODE is set to ⏏ or 5SEC

You cannot use the fader function.

While in MEMORY mode

You cannot use the fader function.

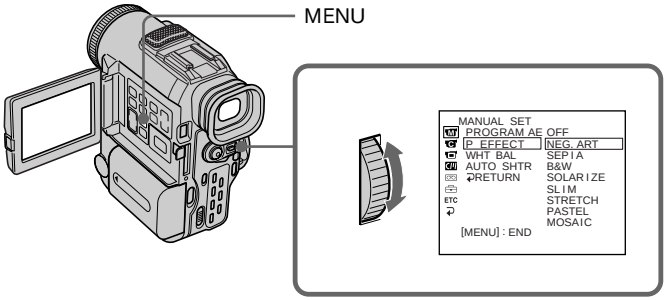
Using special effects – Picture effect

You can digitally process images to obtain special effects like those in films or on TV.

NEG. ART [a] : The color and brightness of the picture is reversed.
SEPIA : The picture gets sepia-toned.
B&W : The picture appears in monochrome (black-and-white).
SOLARIZE [b] : The light intensity is clearer, and the picture looks like an illustration.
SLIM [c] : The picture expands vertically.
STRETCH [d] : The picture expands horizontally.
PASTEL [e] : The contrast of the picture is emphasized, and the picture looks like an animated cartoon.
MOSAIC [f] : The picture gets mosaic-patterned.

[a] [b] [c] [d] [e] [f]

(1) In the standby / recording mode, select P EFFECT in M in the menu settings. (p. 76).
(2) Select the desired picture effect mode in the menu settings.



To turn the picture effect function off

Set P EFFECT to OFF in the menu settings (p. 76).

While using the picture effect function

You cannot select the old movie mode with DIGITAL EFFECT.

When you turn the power off

Your camcorder automatically returns to the normal mode.

Using special effects – Digital effect

You can add special effects to recorded pictures using the various digital functions. The sound is recorded normally.

STILL
You can record a still picture so that it is superimposed on a moving picture.

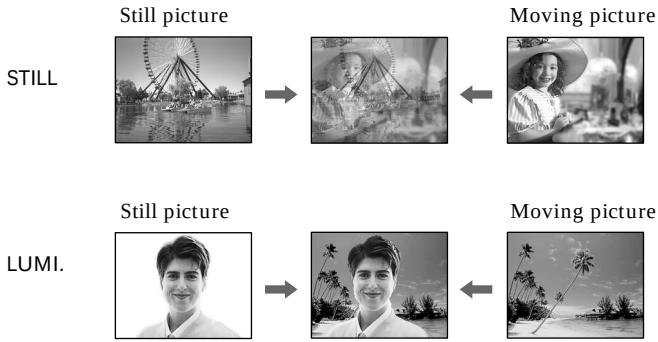
FLASH (FLASH MOTION)
You can record still pictures successively at constant intervals.

LUMI. (LUMINANCEKEY)
You can swap a brighter area in a still picture with a moving picture.

TRAIL
You can record the picture so that an incidental image like a trail is left.

SLOW SHTR (SLOW SHUTTER)
You can slow down the shutter speed. The slow shutter mode is good for recording dark pictures more brightly.

OLD MOVIE
You can add an old movie type atmosphere to pictures. Your camcorder automatically sets the wide mode to ON and picture effect to SEPIA.

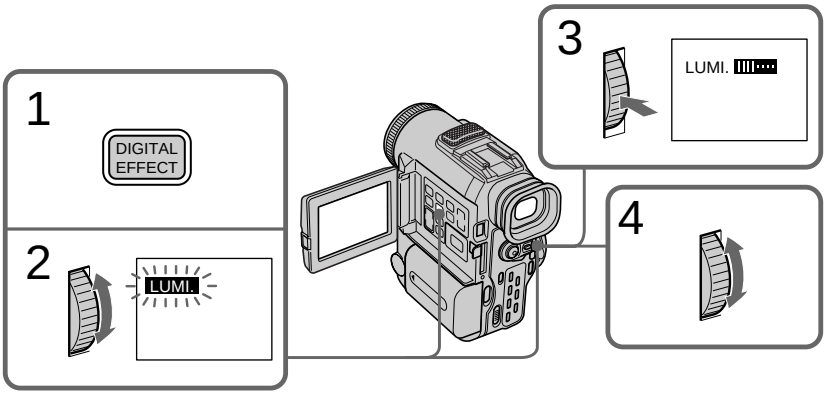


(1) In the standby / recording mode, press DIGITAL EFFECT. The digital effect indicator appears.
(2) Turn the SEL / PUSH EXEC dial to select the desired digital effect mode. The indicator changes as follows:
STILL ↔ FLASH ↔ LUMI. ↔ TRAIL ↔ SLOW SHTR ↔ OLD MOVIE
(3) Press the SEL / PUSH EXEC dial. The indicator lights up and the bars appear. In the STILL and LUMI. modes, the still picture is stored in memory.
(4) Turn the SEL / PUSH EXEC dial to adjust the effect.

Items to be adjusted

STILL	The rate of the still picture you want to superimpose on the moving picture
FLASH	The interval of flash motion
LUMI.	The color scheme of the area in the still picture which is to be swapped with a moving picture
TRAIL	The time until the incidental image vanishes
SLOW SHTR	Shutter speed. The larger the shutter speed number, the slower the shutter speed.
OLD MOVIE	No adjustment necessary

The more bars there are on the screen, the stronger the digital effect. The bars appear in the following modes: STILL, FLASH, LUMI. and TRAIL.



To cancel the digital effect

Press DIGITAL EFFECT. The digital effect indicator disappears.

Notes

- The following functions do not work during digital effect:
  – Fader
  – Low lux mode of PROGRAM AE
  – Photo recording
  – NightShot +Slow shutter
- The following function does not work in the slow shutter mode:
  – PROGRAM AE
- The following functions do not work in the old movie mode:
  – Wide mode
  – Picture effect
  – PROGRAM AE

When you turn the power off

The digital effect will be automatically canceled.

When recording in the slow shutter mode

Auto focus may not be effective. Focus manually using a tripod.

Shutter speed

Shutter speed number	Shutter speed
SLOW SHTR 1	1/30
SLOW SHTR 2	1/15
SLOW SHTR 3	1/8
SLOW SHTR 4	1/4

Using the PROGRAM AE function

You can select PROGRAM AE (Auto Exposure) mode to suit your specific shooting requirements.

Spotlight mode
This mode prevents people's faces, for example, from appearing excessively white when shooting subjects lit by strong light in the theater.

Soft portrait mode
This mode brings out the subject while creating a soft background for subjects such as people or flowers.

Sports lesson mode
This mode minimizes shake on fast-moving subjects such as in tennis or golf.

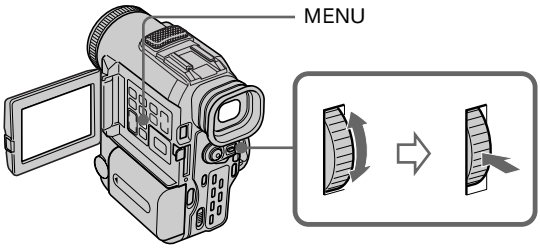
Beach & ski mode
This mode prevents people's faces from appearing dark in strong light or reflected light, such as at a beach in midsummer or on a ski slope.

Sunset & moon mode
This mode allows you to maintain atmosphere when you are recording sunsets, general night views, fireworks displays and neon signs.

Landscape mode
This mode is for when you are recording distant subjects such as mountains and prevents your camcorder from focusing on glass or metal mesh in windows when you are recording a subject behind glass or a screen.

Low lux mode
This mode makes subjects brighter in insufficient light.

(1) In the standby or memory mode, select PROGRAM AE in in the menu settings (p. 76).
(2) Select the desired PROGRAM AE mode by turning the SEL / PUSH EXEC dial. The indicator changes as follows:



To turn the PROGRAM AE function off

Set PROGRAM AE to AUTO in the menu settings (p. 76).

Notes

- In the spotlight, sports lesson and beach & ski modes, you cannot take close-ups. This is because your camcorder is set to focus only on subjects in the middle to far distance.
- In the sunset & moon and landscape modes, your camcorder is set to focus only on distant subjects.
- The following functions do not work in the PROGRAM AE mode:
  – Slow shutter
  – Old movie
- The following functions do not work in the low lux mode:
  – Digital effect
  – Overlap
- While setting the NIGHTSHOT to ON, the PROGRAM AE function does not work. (The indicator flashes.)
- While shooting in MEMORY mode, the low lux and sports lesson modes do not work. (The indicator flashes.)

While WHT BAL is set to AUTO in the menu settings

The white balance is adjusted even if the PROGRAM AE function is selected.

If you are recording under a discharge tube such as a fluorescent lamp, sodium lamp or mercury lamp

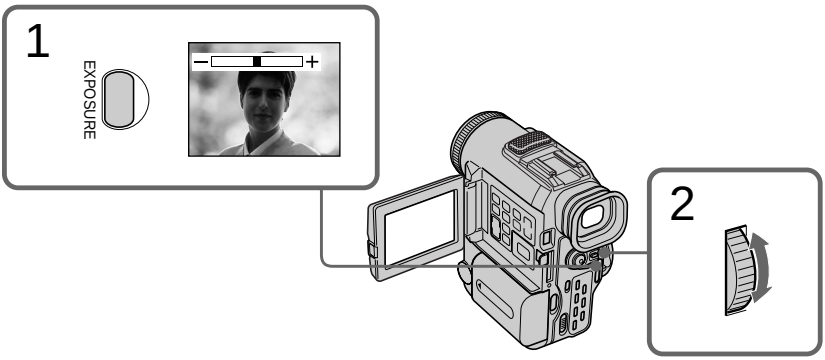
Flickering or changes in color may occur in the following modes. If this happens, turn the PROGRAM AE function off.
– Soft portrait mode
– Sports lesson mode

Adjusting the exposure manually

You can manually adjust and set the exposure. Adjust the exposure manually in the following cases:

- The subject is backlit
- Bright subject and dark background
- To record dark pictures (e.g. night scenes) faithfully

(1) In the standby / recording / memory mode, press EXPOSURE. The exposure indicator appears.
(2) Turn the SEL / PUSH EXEC dial to adjust the brightness.



To return to the automatic exposure mode

Press EXPOSURE again.

Note

When you adjust the exposure manually, the backlight function does not work.

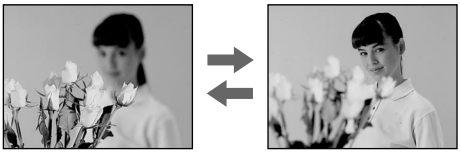
If you change the PROGRAM AE mode or slide NIGHTSHOT to ON

Your camcorder automatically returns to the automatic exposure mode.

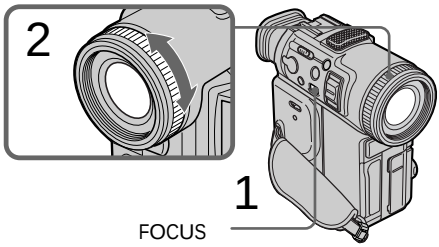
Focusing manually

You can gain better results by manually adjusting the focus in the following cases:

- The autofocus mode is not effective when shooting
  - subjects through glass coated with water droplets
  - horizontal stripes
  - subjects with little contrast with backgrounds such as walls and sky
- When you want to change the focus from a subject in the foreground to a subject in the background
- Shooting a stationary subject when using a tripod



(1) Press FOCUS lightly in the standby / recording / memory mode. The MF indicator appears on the LCD screen or in the viewfinder.
(2) Turn the focus ring to sharpen focus.



To return to the autofocus mode

Press FOCUS lightly to turn off the MF, ▲ or 🧍 indicator.

To record distant subjects

Press FOCUS deeper (INFINITY). Your camcorder focuses on distant subjects and the ▲ indicator appears. When you release FOCUS, your camcorder returns to the manual focus mode. Use this mode when your camcorder focuses on near objects even though you are trying to shoot a distant object.

To obtain correct focus

First, focus a subject with the power zoom lever moved toward the “T” (telephoto) position, then adjust the zoom.

When you shoot close to the subject

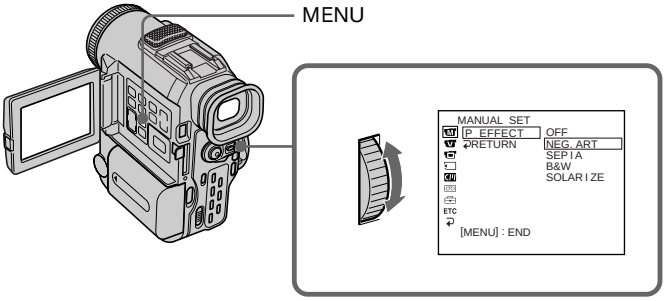
Focus at the end of the “W” (wide-angle) position.

MF changes as follows:
▲ when recording a distant subject.
🧍 when the subject is too close to focus on.

Playing back a tape with picture effects

During playback, you can process a scene using the picture effect functions: NEG. ART, SEPIA, B&W and SOLARIZE.

In the playback / playback pause mode, select the desired picture effect mode in the menu settings (p. 76).
For details of each picture effect function, see page 38.



To cancel the picture effect function

Set P EFFECT to OFF in the menu settings (p. 76).

Notes

- You cannot process the picture that is input from other equipment using the picture effect function.
- To record pictures that you have processed using the picture effect function, record the pictures on the VCR, using your camcorder as a player.

Pictures processed by the picture effect function

Pictures processed by the picture effect function are not output through the i.LINK DV IN / OUT jack.

When you set the POWER switch to OFF or stop playing back

The picture effect function is automatically canceled.

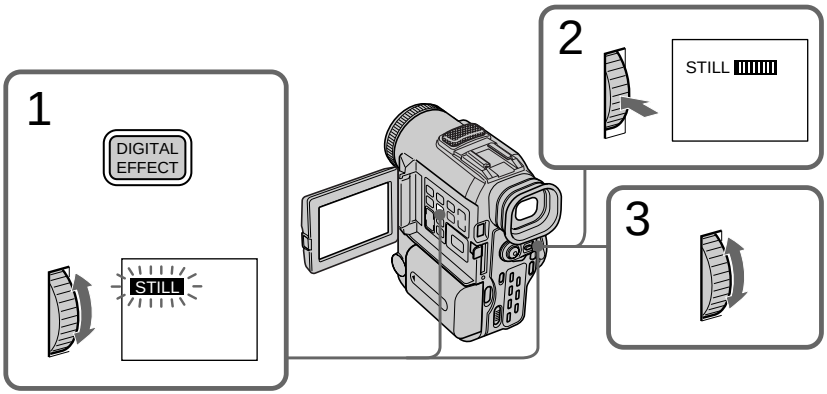
Playing back a tape with digital effects

During playback, you can process a scene using the digital effect functions: STILL, FLASH, LUMI. and TRAIL.

(1) In the playback / playback pause mode, press DIGITAL EFFECT and turn the SEL / PUSH EXEC dial until the desired digital effect indicator (STILL, FLASH, LUMI. or TRAIL) flashes.

(2) Press the SEL / PUSH EXEC dial.
The digital effect indicator lights up and the bars appear. In the STILL or LUMI. mode, the picture is captured and is stored in memory as a still picture at the time you press the SEL / PUSH EXEC dial.

(3) Turn the SEL / PUSH EXEC dial to adjust the effect.
For details of each digital effect function, see page 39.



To cancel the digital effect function

Press DIGITAL EFFECT.

Notes

- You cannot process the picture that is input from other equipment using the digital effect function.
- To record pictures that you have processed using the digital effect, record the pictures on the VCR, using your camcorder as a player.

Pictures processed by the digital effect function

Pictures processed by the digital effect function are not output through the i.LINK DV IN / OUT jack.

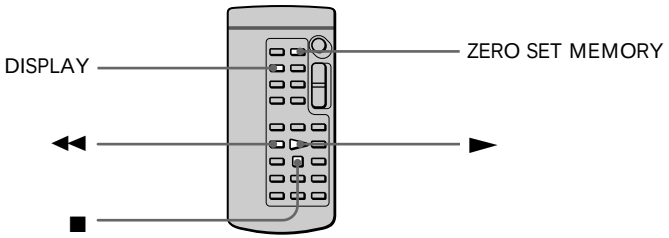
When you set the POWER switch to OFF or stop playing back

The digital effect function is automatically canceled.

Quickly locating a scene using the zero set memory function

Your camcorder rewinds or advances the tape to locate the desired scene, and the searching automatically stops at the scene having a tape counter value of “0:00:00.” You can do this with the Remote Commander.

(1) In the playback mode, press DISPLAY if the counter is not on the LCD screen or in the viewfinder.
(2) Press ZERO SET MEMORY at the point you want to locate later. The tape counter shows “0:00:00” and the ZERO SET MEMORY indicator flashes.
(3) Press ■ when you want to stop playback.
(4) Press ◄◄ to rewind the tape to the tape counter’s zero point. The tape stops automatically when the tape counter reaches approximately zero. The ZERO SET MEMORY indicator disappears and the time code appears.
(5) Press ►. Playback starts.



Notes

- When you press ZERO SET MEMORY again before rewinding the tape, the zero set memory function will be canceled.
- There may be a discrepancy of several seconds from the time code.
- The zero set memory function may not work when there is a blank portion between pictures on a tape.

ZERO SET MEMORY functions also in the recording standby mode

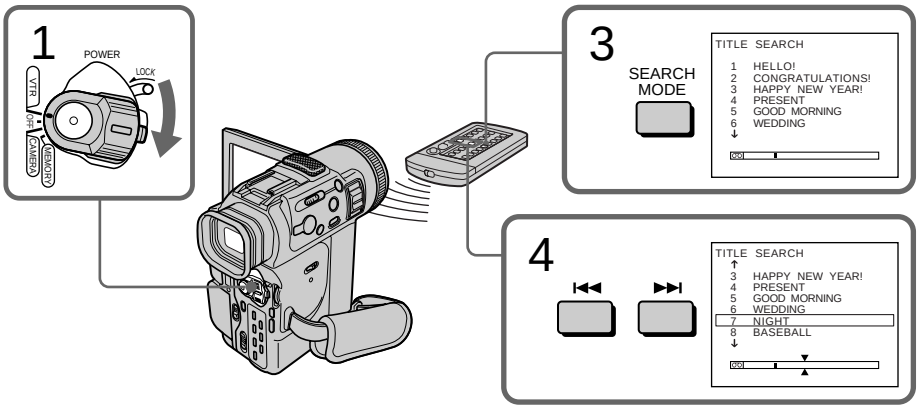
When you insert a scene in the middle of a recorded tape, press ZERO SET MEMORY at the point you want to end the insertion. Rewind the tape to the insert start point, and start recording. Recording stops automatically at the tape counter zero point. Your camcorder returns to the standby mode.

Searching the boundaries of recorded tape by title – Title search

CM only

If you use a tape with cassette memory, you can search for the boundaries of recorded tape by title (Title search)(p. 114). Use the Remote Commander for this operation.

(1) Set the POWER switch to VTR.
(2) Set CM SEARCH in CM to ON in the menu settings (p. 76). Default setting is ON.
(3) Press SEARCH MODE on the Remote Commander repeatedly, until the title search indicator appears.
The indicator changes as follows:
TITLE SEARCH → DATE SEARCH → PHOTO SEARCH → PHOTO SCAN → no indicator
(4) Press ⏮ or ⏭ on the Remote Commander to select the title for playback.
Your camcorder automatically starts playback of the scene having the title that you selected.



To stop searching

Press ■.

If you use a tape without cassette memory

You cannot superimpose or search a title.

In the mark

- The bar in the mark indicates the present point on the tape.
- The ⧗ mark in the indicates the actual point you are trying to search.

If a tape has a blank portion between recorded portions

The title search function may not work correctly.

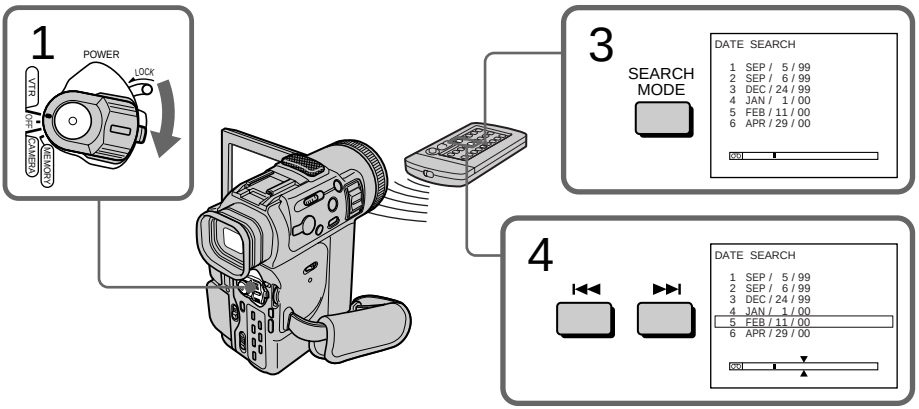
Searching a recording by date – Date search

You can automatically search for the point where the recording date changes and start playback from that point (Date search). Use a tape with cassette memory for convenience. Use the Remote Commander for this operation.
Use this function to check where recording dates change or to edit the tape at each recording date.

Searching for the date by using cassette memory

You can use this function only when playing back a tape with cassette memory (p. 114).

(1) Set the POWER switch to VTR.
(2) Set CM SEARCH in CAM to ON in the menu settings (p. 76). Default setting is ON.
(3) Press SEARCH MODE on the Remote Commander repeatedly, until the date search indicator appears.
The indicator changes as follows:
TITLE SEARCH → DATE SEARCH → PHOTO SEARCH → PHOTO SCAN → no indicator
(4) Press ⏮ or ⏭ on the Remote Commander to select the date for playback. Your camcorder automatically starts playback at the beginning of the selected date.



To stop searching

Press ■.

Note

If one day's recording is less than two minutes, your camcorder may not accurately find the point where the recording date changes.

In the mark

- The bar in the mark indicates the present point on the tape.
- The ⧗ mark in the indicates the actual point you are trying to search.

If a tape has a blank portion between recorded portions

The date search function may not work correctly.

Cassette memory

The tape cassette memory can hold six recording date data. If you search the date among seven or more data, see "Searching for the date without using cassette memory" below.

Searching for the date without using cassette memory

(1) Set the POWER switch to VTR.
(2) Set CM SEARCH in CM to OFF in the menu settings (p. 76). If using a tape without cassette memory, skip this step.
(3) Press SEARCH MODE on the Remote Commander repeatedly, until the date search indicator appears.
The indicator changes as follows:
DATE SEARCH → PHOTO SEARCH → PHOTO SCAN → no indicator
(4) Press ⏮ on the Remote Commander to search for the previous date or press ⏭ on the Remote Commander to search for the next date. Your camcorder automatically starts playback at the point where the date changes. Each time you press ⏮ or ⏭, your camcorder searches for the previous or next date.

To stop searching

Press ■.

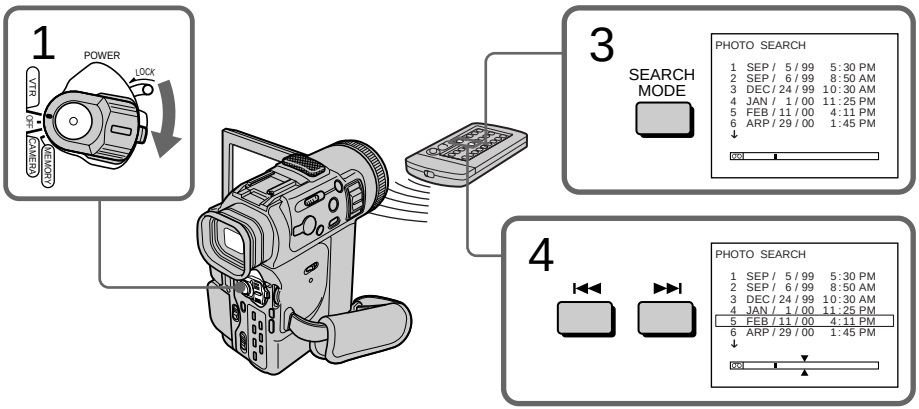
Searching for a photo – Photo search/ Photo scan

You can search for a still picture you have recorded on a mini DV tape (photo search). You can also search for still pictures one after another and display each picture for five seconds automatically regardless of cassette memory (photo scan). Use the Remote Commander for these operations.
Use this function to check or edit still pictures.

Searching for a photo by using cassette memory

You can use this function only when playing back a tape with cassette memory (p. 114).

(1) Set the POWER switch to VTR.
(2) Set CM SEARCH in [CM] to ON in the menu settings (p. 76). Default setting is ON.
(3) Press SEARCH MODE on the Remote Commander repeatedly, until the photo search indicator appears.
The indicator changes as follows:
TITLE SEARCH → DATE SEARCH → PHOTO SEARCH → PHOTO SCAN → no indicator
(4) Press ⏮ or ⏭ on the Remote Commander to select the date for playback. Your camcorder automatically starts playback of the photo having the date that you selected.



To stop searching

Press ■.

In the [tape] mark

- The bar in the [tape] mark indicates the present point on the tape.
- The ⧗ mark in the [tape] indicates the actual point you are trying to search.

If a tape has a blank portion between recorded portions

The photo search function may not work correctly.

The available number of photos that can be searched using the cassette memory

The available number is up to 12 photos. However, you can search 13 photos or more using the scanning photo function.

Searching for a photo without using cassette memory

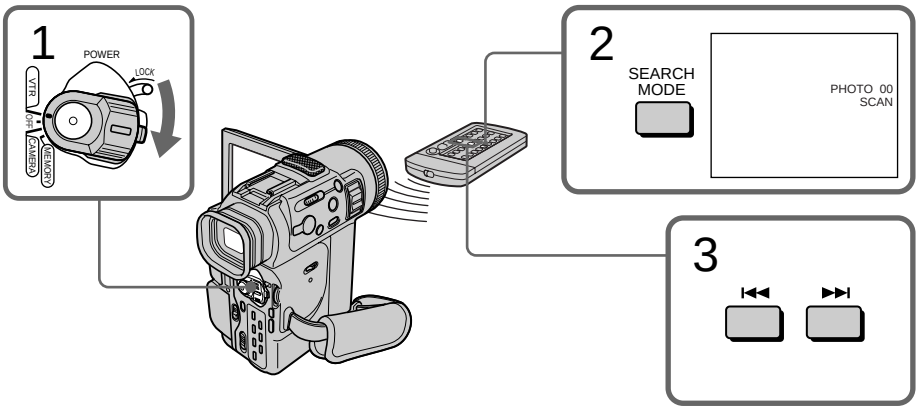
(1) Set the POWER switch to VTR.
(2) Set CM SEARCH in CM to OFF in the menu settings (p. 76).
(3) Press SEARCH MODE on the Remote Commander repeatedly, until the photo search indicator appears.
The indicator changes as follows:
DATE SEARCH → PHOTO SEARCH → PHOTO SCAN → no indicator
(4) Press ⏮ or ⏭ on the Remote Commander to select the photo for playback.
Each time you press ⏮ or ⏭, your camcorder searches for the previous or next photo.
Your camcorder automatically starts playback of the photo.

To stop searching

Press ■.

Scanning photo

(1) Set the POWER switch to VTR.
(2) Press SEARCH MODE on the Remote Commander repeatedly, until the photo scan indicator appears.
The indicator changes as follows:
TITLE SEARCH → DATE SEARCH → PHOTO SEARCH → PHOTO SCAN → no indicator
(3) Press ⏮ or ⏭ on the Remote Commander.
Each photo is played back for about five seconds automatically.



To stop scanning

Press ■.

Dubbing a tape

Using the A/V connecting cable

Connect your camcorder to the VCR using the A/V connecting cable supplied with your camcorder.

Set the input selector on the VCR to LINE, if available.

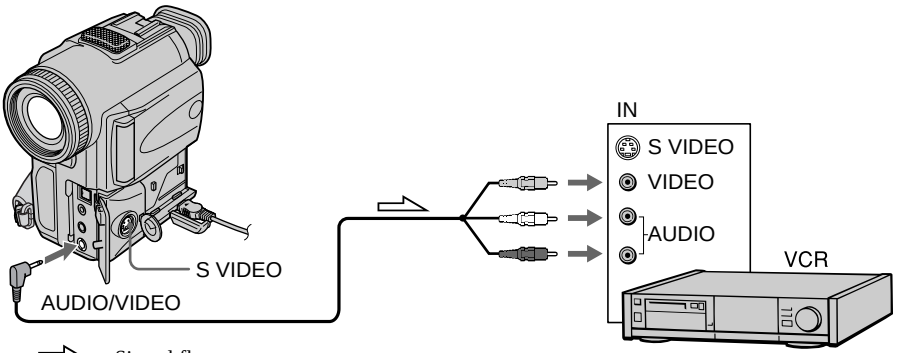
(1) Insert a blank tape (or a tape you want to record over) into the VCR, and insert the recorded tape into your camcorder.

(2) Set the input selector on the VCR to LINE. For details, refer to the operating instructions of the VCR.

(3) Set the POWER switch to VTR.

(4) Play back the recorded tape on your camcorder.

(5) Start recording on the VCR. For details, refer to the operating instructions of the VCR.



: Signal flow

When you have finished dubbing a tape

Press ■ on both your camcorder and the VCR.

Before a dubbing

Set DISPLAY to LCD in the menu settings. (Default setting is LCD.)

Be sure to clear the indicators from the screen

If they are displayed, press the following buttons not to record the indicators on the dubbed tape:

- The DISPLAY button
- The DATA CODE button on the Remote Commander
- The SEARCH MODE button on the Remote Commander

You can edit on VCRs that support the following systems

8 mm, Hi8 Hi8, Digital8, VHS, S-VHS, VHSC, S-VHSC, Betamax, ED Beta ED Betamax, mini DV or DV

If your VCR is a monaural type

Connect the yellow plug of the A/V connecting cable to the video input jack and the white or the red plug to the audio input jack on the VCR or the TV. When the white plug is connected, the left channel audio is output, and the red plug is connected, the right channel audio is output.

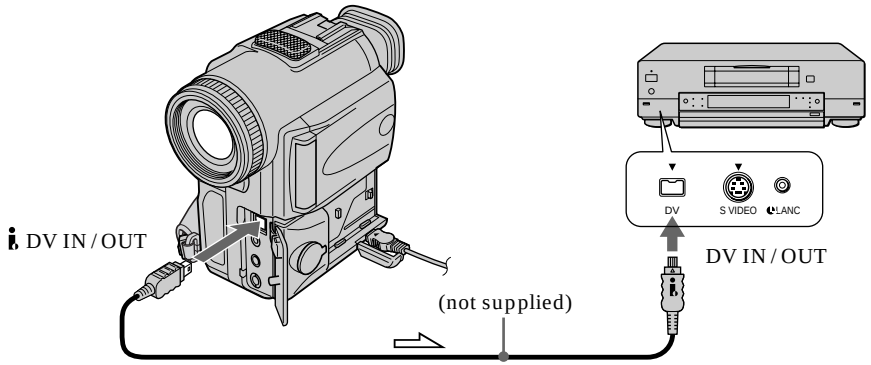
Connect using an S video cable (not supplied) to obtain high-quality pictures

With this connection, you do not need to connect the yellow (video) plug of the A / V connecting cable.
Connect an S video cable (not supplied) to the S video jacks of both your camcorder and the VCR.
This connection produces higher quality DV format pictures.

Using the i.LINK cable (DV connecting cable)

Simply connect the i.LINK cable (DV connecting cable) (not supplied) to i DV IN / OUT and to DV IN / OUT of the DV products. With digital-to-digital connection, video and audio signals are transmitted in digital form for high-quality editing. You cannot dub the titles, display indicators or the contents of cassette memory.
Set the input selector on the VCR to the DV input position if the VCR is equipped with the input selector.

(1) Insert a blank tape (or a tape you want to record over) into the VCR, and insert the recorded tape into your camcorder.
(2) Set the POWER switch to VTR.
(3) Play back the recorded tape on your camcorder.
(4) Start recording on the VCR.



When you have finished dubbing a tape

Press ■ on both your camcorder and the VCR.

You can connect one VCR only using the i.LINK cable (DV connecting cable)

Pictures processed by the digital effect function

Pictures processed by the digital effect function are not output through the i DV IN / OUT jack.

If you record a playback pause picture with the i DV IN/OUT jack

The recorded picture becomes rough. And when you play back the picture using the other video equipment, the picture may jitter.

Editing partially on a DV tape – DV synchro-editing

By simply selecting the scenes to edit, you can duplicate the desired portion on a tape, using other equipment connected with an i.LINK cable (DV connecting cable) (not supplied). The scenes can be selected by frame. You can also use the Remote Commander for this operation. Since your camcorder exchanges digital signals, you can edit with little audio and video deterioration.
You cannot duplicate titles, display indicators, or the contents of cassette memory.
The connection is the same as on page 55.

Preparing the editing

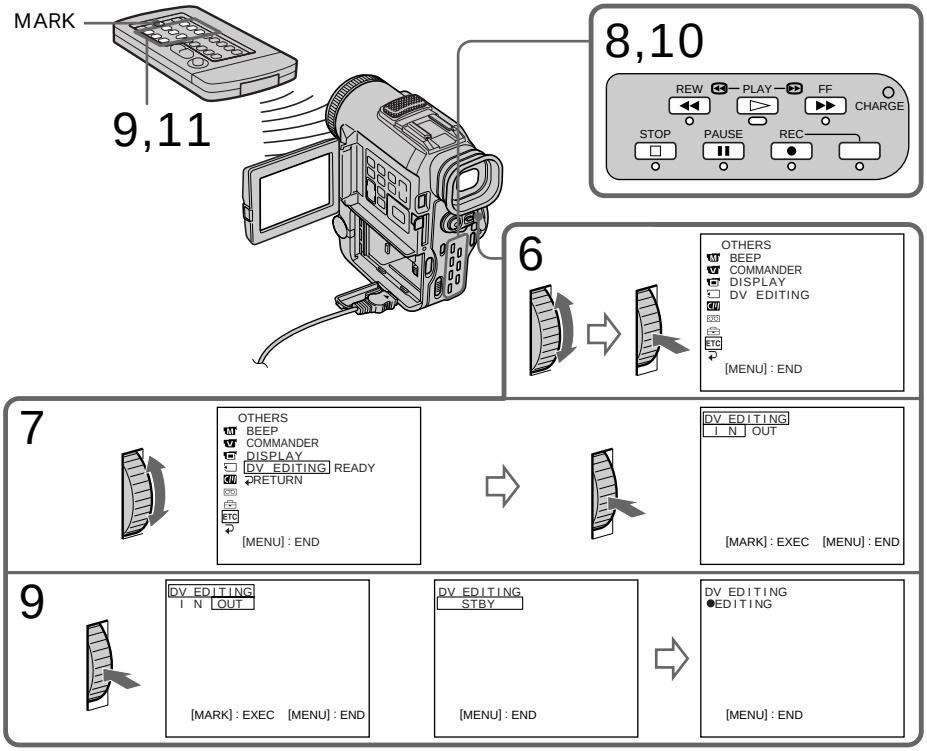
(1) Insert a recorded tape into your camcorder and insert a blank tape (or a tape you want to record over) into the DV product.
(2) Connect your camcorder to the DV product with an i.LINK cable (DV connecting cable).
(3) Set the POWER switch on your camcorder to VTR.
(4) Set the input selector to DV input on the DV product. If the DV product is another DV camcorder, set its POWER switch to VTR.
(5) Press MENU to display the menu.
(6) Turn the SEL / PUSH EXEC dial to select ETC, then press the dial.
(7) Turn the SEL / PUSH EXEC dial to select DV EDITING, then press the dial.

Setting the editing in point

(8) Using the video control buttons, locate the point where you want to start editing, then press ❚❚ to set your camcorder in the playback pause mode (p. 133).
(9) Press the SEL / PUSH EXEC dial or MARK on the Remote Commander to set DV EDITING IN.

Setting the editing out point and starting the editing

(10) Using the video control buttons, locate the point where you want to end editing, then press ❚❚ to set your camcorder in the playback pause mode.
(11) Press the SEL / PUSH EXEC dial or MARK on the Remote Commander to set DV EDITING OUT. Once the editing process starts, the display changes from "STBY" to "●EDITING." When the process ends, your camcorder and the DV product automatically set to pause mode.



Notes

- If you use other than Sony equipment with the i DV jack, you cannot perform DV synchro-editing.
- If a tape has a blank portion between recorded portions, DV synchro-editing may not work correctly.

Errors in duplicating

If you connect your camcorder to Sony equipment with the DV jack, the range of errors is within +/– 5 frames.
The range may become wider in the following conditions:

- The interval between DV EDITING IN and OUT is less than five seconds.
- DV EDITING IN or OUT is set at the beginning of the tape.

If you do not make connections with the i.LINK cable (DV connecting cable)

The screen shows NOT READY, and you cannot select DV EDITING.

On a blank portion of the tape

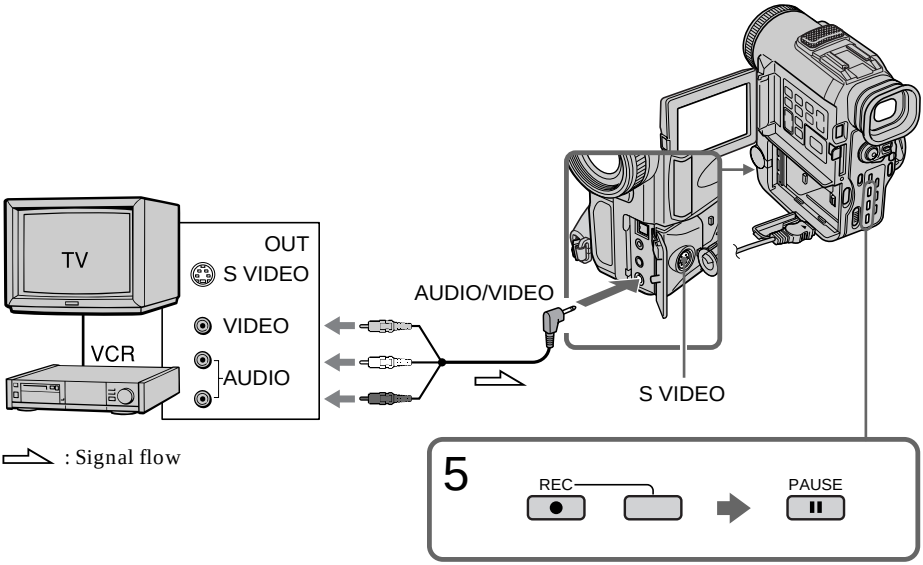
You cannot set DV EDITING IN or OUT.

Recording video or TV programs

Using the A/V connecting cable

You can record a tape from another VCR or a TV program from a TV that has video/audio outputs. Use your camcorder as a recorder.

(1) Insert a blank tape (or a tape you want to record over) into your camcorder. If you are recording a tape from the VCR, insert a recorded tape into the VCR.
(2) Set the POWER switch to VTR on your camcorder.
(3) Set DISPLAY in ETC to LCD in the menu settings (p. 76).
(4) Press MENU to erase the menu display.
(5) Press ● REC and the button on its right simultaneously on your camcorder, then immediately press II on your camcorder.
(6) Press ► on the VCR to start playback if you record a tape from a VCR. Select a TV program if you record from a TV. The picture from a TV or VCR appears on the LCD screen or in the viewfinder.
(7) Press II on your camcorder at the scene where you want to start recording from.



When you have finished dubbing a tape

Press ■ on both your camcorder and the VCR.

Using the Remote Commander

In step 5, press ● REC and MARK simultaneously, then immediately press II. And in step 7, press II at the scene where you want to start recording from.

If your VCR is a monaural type

Connect the yellow plug of the A/V connecting cable to the video output jack and the white or the red plug to the audio output jack on the VCR or the TV. When the white plug is connected, the left channel audio is output, and the red plug is connected, the right channel audio is output.

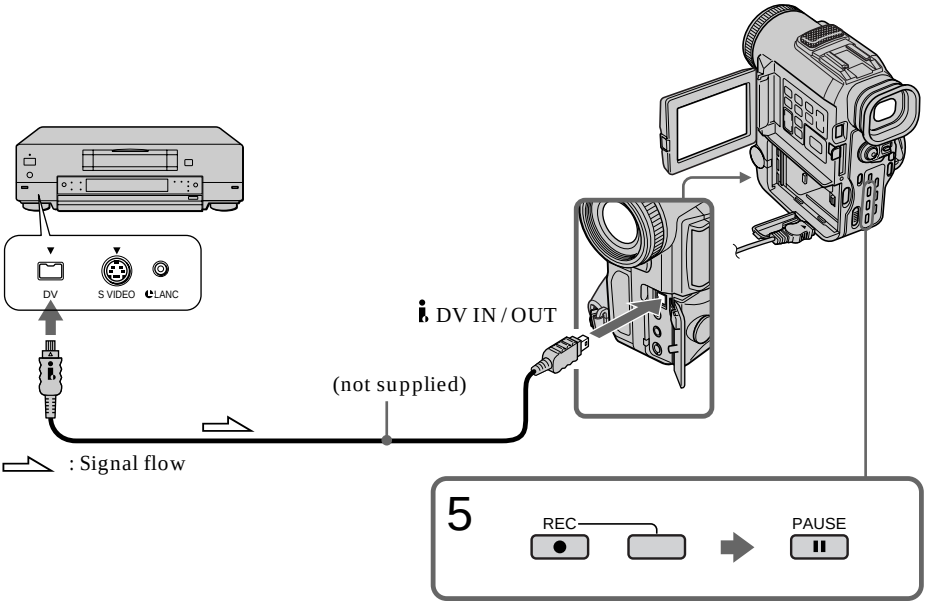
Connect using an S video cable (not supplied) to obtain high-quality pictures

With this connection, you do not need to connect the yellow (video) plug of the A/V connecting cable.
Connect an S video cable (not supplied) to the S (S1) video jacks of both your camcorder and the VCR.
This connection produces higher quality DV format pictures.

Using the i.LINK cable (DV connecting cable)

Simply connect the i.LINK cable (DV connecting cable) (not supplied) to i DV IN / OUT and to DV IN / OUT of the DV products. With digital-to-digital connection, video and audio signals are transmitted in digital form for high-quality editing.

(1) Insert a blank tape (or a tape you want to record over) into your camcorder, and insert the recorded tape into the VCR.
(2) Set the POWER switch to VTR.
(3) Set DISPLAY in ETC to LCD in the menu settings (p. 76).
(4) Press MENU to erase the menu display.
(5) Press ● REC and the button on its right simultaneously on your camcorder, then immediately press ❚❚ on your camcorder.
(6) Press ► on the VCR to start playback. The picture to be recorded appears on the LCD screen or in the viewfinder.
(7) Press ❚❚ on your camcorder at the scene where you want to start recording from.



When you have finished dubbing a tape

Press ■ on both your camcorder and the VCR.

Using the Remote Commander

In step 5, press ● REC and MARK simultaneously, then immediately press ❚❚. And in step 7, press ❚❚ at the scene where you want to start recording from.

You can connect one VCR only using the i.LINK cable (DV connecting cable)

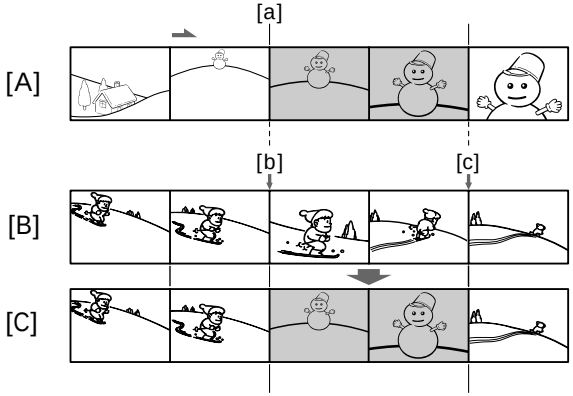
When you dub a picture in digital form
The color of the display may be uneven. However this does not affect the dubbed picture.

If you record playback pause picture with the i.DV IN/OUT jack
The recorded picture becomes rough. And when you play back the picture using your camcorder, the picture may jitter.

Before recording
Make sure if the DV IN indicator appears on the LCD screen or in the viewfinder. The DV IN indicator may appear on both equipment.

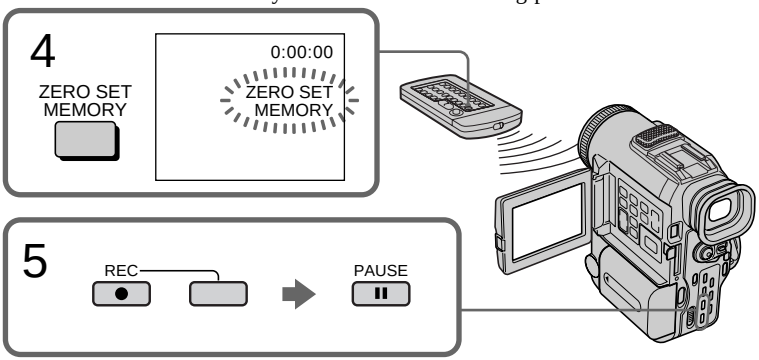
Inserting a scene from a VCR – Insert editing

You can insert a new scene from a VCR onto your originally recorded tape by specifying the insert start and end points. Use the Remote Commander for this operation. Connections are the same as on page 55 or 58.
Insert a cassette containing the desired scene to insert into the VCR.



[A]: A tape that contains the scene to be superimposed
[B]: A tape before editing
[C]: A tape after editing

(1) Set the POWER switch to VTR.
(2) On the VCR, locate just before the insert start point [a], then press ❚❚ to set the VCR to the playback pause mode.
(3) On your camcorder, locate the insert end point [c] by pressing ◀◀ or ▶▶. Then press ❚❚ to set it to the playback pause mode.
(4) Press ZERO SET MEMORY on the Remote Commander. The ZERO SET MEMORY indicator flashes and the end point of the insert is stored in memory. The tape counter shows "0:00:00."
(5) On your camcorder, locate the insert start point [b] by pressing ◀◀, then press ● REC and the button on its right simultaneously, then immediately press ❚❚ on your camcorder.
(6) First press ❚❚ on the VCR, and after a few seconds press ❚❚ on your camcorder to start inserting the new scene.
Inserting automatically stops near the zero point on the tape counter. Your camcorder automatically returns to the recording pause mode.



To change the insert end point

Press ZERO SET MEMORY on the Remote Commander again after step 5 to erase the ZERO SET MEMORY indicator and begin from step 3.

Using the Remote Commander

In step 5, press ●REC and MARK simultaneously, then immediately press ❚❚. And in step 6, press ❚❚ at the scene where you want to start recording from.

Note

The picture and sound recorded on the portion between the insert start and end points will be erased when you insert the new scene.

If you insert scenes on the tape recorded with other camcorder (including other DCR-PC100)

The picture and sound may be distorted. We recommend that you insert scenes on a tape recorded with your camcorder.

When the inserted picture is played back

The picture and sound may be distorted at the end of the inserted portion. This is not a malfunction.

The picture and sound at the start point and the end point may be distorted in the LP mode.

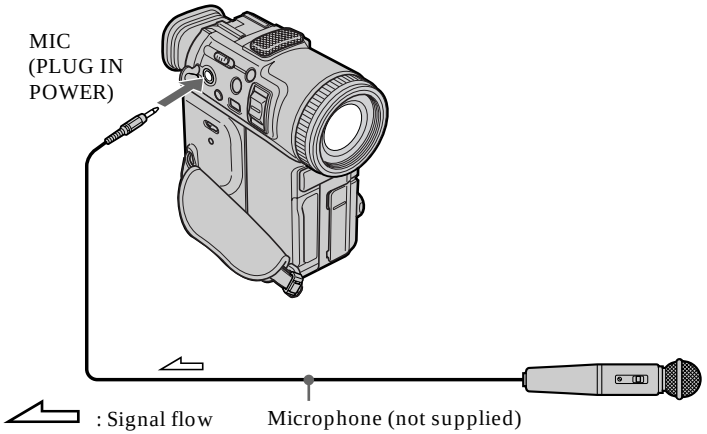
To insert a scene without setting the insert end point

Skip steps 3 and 4. Press ■ when you want to stop inserting.

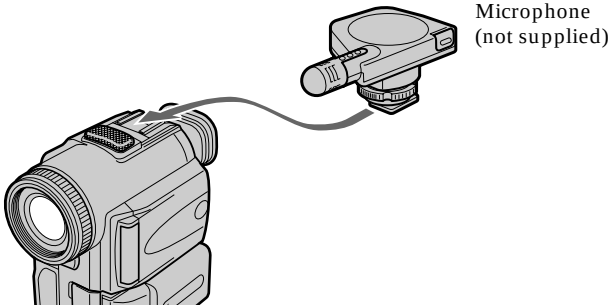
Audio dubbing

You can record an audio sound to add to the original sound on a tape by connecting audio equipment or a microphone. If you connect the audio equipment, you can add sound to your recorded tape by specifying starting and ending points. The original sound will not be erased.
Use the Remote Commander for this operation.

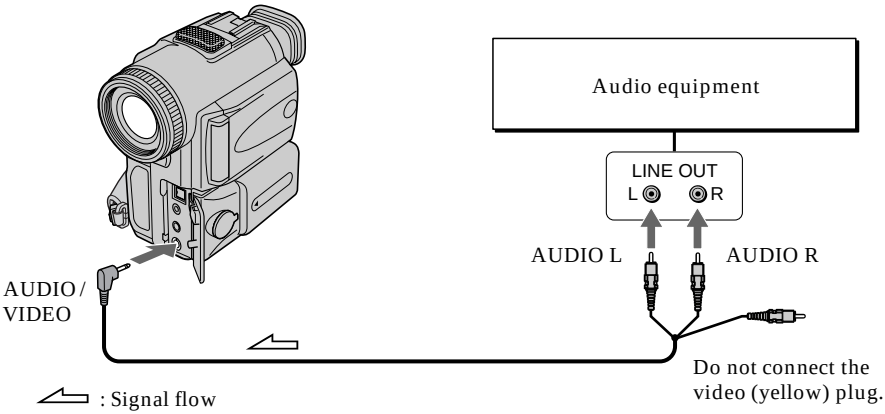
Connecting the microphone with the MIC jack



Connecting the microphone with the intelligent accessory shoe



Dubbing with the AUDIO/VIDEO jack



Dubbing with the built-in microphone

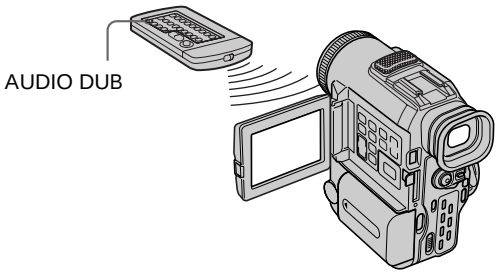
No connection is necessary.

Notes

- When dubbing with the AUDIO / VIDEO jack, you can check the recorded picture on the LCD screen or in the viewfinder, and can check the recorded sound by using a speaker or headphones.
- When dubbing with the built-in microphone or an external one, you can check the recorded picture on the LCD screen, in the viewfinder, or on the screen of equipment connected with the S VIDEO jack, and can check the recorded sound by using headphones.

Adding an audio sound on a recorded tape

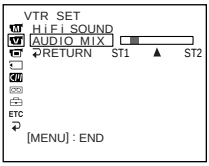
(1) Insert the recorded tape into your camcorder.
(2) Set the POWER switch to VTR on your camcorder.
(3) Locate the recording start point by pressing ► on the Remote Commander. Then press ❚❚ at the point where you want to start recording to set your camcorder to the playback pause mode.
(4) Press AUDIO DUB on the Remote Commander. The green ⏺❚❚ indicator appears on the LCD screen or in the viewfinder.
(5) Press ❚❚ on the camcorder or on the Remote Commander and start playing back the audio you want to record at the same time.
The new sound is recorded in stereo 2 (ST2) during playback.
(6) Press ■ at the point where you want to stop recording.



Monitoring the new recorded sound

To play back the sound

Adjust the balance between the original sound (ST1) and the new sound (ST2) by selecting AUDIO MIX in the menu settings (p. 76).



Five minutes after when you disconnect the power source or remove the battery pack, the setting of AUDIO MIX returns to the original sound (ST1) only. The default setting is original sound only.

Notes

- New sound cannot be recorded on a tape already recorded in the 16-bit mode (32 kHz, 44.1 kHz or 48 kHz) (p. 80).
- New sound cannot be recorded on a tape already recorded in the LP mode.
- You cannot add audio with the i. DV IN / OUT jack.

If you make all the connections

The audio input to be recorded will take precedence over others in the following order.

- MIC (PLUG IN POWER) jack
- Intelligent accessory shoe
- AUDIO / VIDEO jack
- Built-in microphone

If an i.LINK cable (DV connecting cable) (not supplied) is connected to your camcorder

You cannot add a sound to a recorded tape.

If you set the write-protect tab of the tape to lock

You cannot record on a tape. Slide the write-protect tab to release the write protection.

We recommend that you add new sound on a tape recorded with your camcorder

If you add new sound on a tape recorded with another camcorder (including other DCR-PC100), the sound quality may become worse.

To add new sound more precisely

Press ZERO SET MEMORY on the Remote Commander at the point where you want to stop recording later in the playback mode.
Carry out steps 3 to 5. Recording automatically stops at the point where ZERO SET MEMORY was pressed.

On blank portions

You cannot add an audio.

Superimposing a title

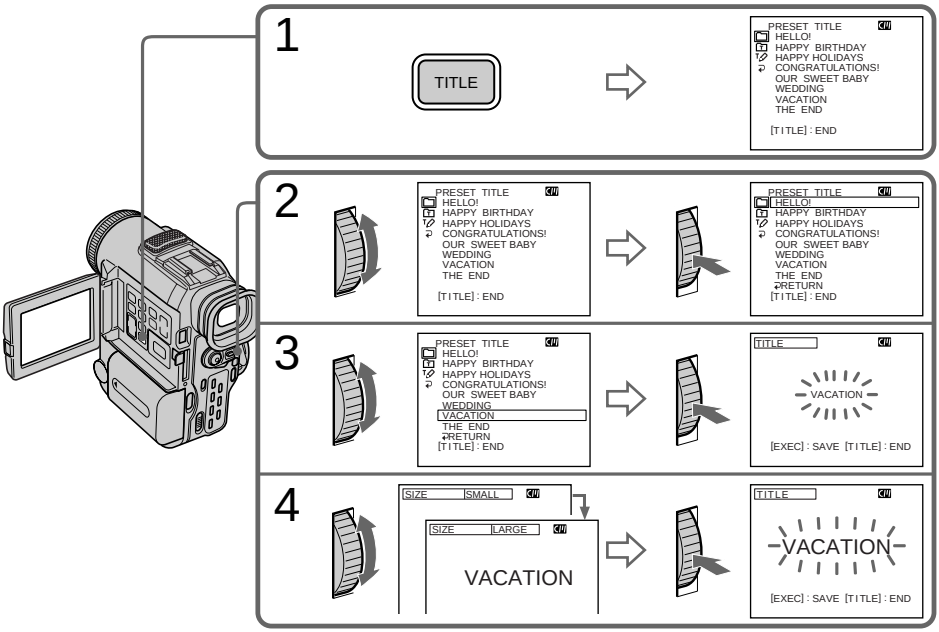
CM only

If you use a tape with cassette memory, you can superimpose the title while recording or after recording. When you play back the tape, the title is displayed for five seconds from the point where you superimposed it.

You can select one of eight preset titles and two custom titles (p. 72).

You can also select the color, size and position of titles.

(1) Press TITLE to display the title menu in the standby / recording / playback / playback pause mode.
(2) Turn the SEL / PUSH EXEC dial to select 🗀, then press the dial.
(3) Turn the SEL / PUSH EXEC dial to select the desired title, then press the dial. The title is flashing.
(4) Change the color, size, or position, if necessary.
    ① Turn the SEL / PUSH EXEC dial to select the COLOR, SIZE, or POSITION, then press the dial. The item appears.
    ② Turn the SEL / PUSH EXEC dial to select the desired item, then press the dial.
    ③ Repeat steps 1 and 2 until the title is laid out as desired.
(5) Press the SEL / PUSH EXEC dial again to complete the setting.
    In the playback, playback pause or recording mode:
    The “TITLE SAVE” indicator appears on the screen for five seconds and the title is set.
    In the standby mode:
    The “TITLE” indicator appears. And when you press START / STOP to start recording, “TITLE SAVE” appears on the screen for five seconds and the title is set.



If you set the write-protect tab to lock

You cannot superimpose or erase the title. Slide the write-protect tab to release the write protection.

To use the custom title

If you want to use the custom title, select 🅃 in step 2.

If the tape has a blank portion

You cannot superimpose a title on the portion.

If the tape has a blank portion in the middle of the recorded parts

The title may not be displayed correctly.

The titles superimposed with your camcorder

- They are displayed by only the DV Mini DV format video equipment with index titler function.
- The point you superimposed the title may be detected as an index signal when searching a recording with other video equipment.

If the tape has too many index signals

You may not be able to superimpose a title because the memory is full. In this case, delete data you do not need.

Not to display titles

Set TITLE DISP to OFF in the menu settings (p. 76).

Title setting

- The title color changes as follows:
  WHITE ↔ YELLOW ↔ VIOLET ↔ RED ↔ CYAN ↔ GREEN ↔ BLUE
- The title size changes as follows:
  SMALL ↔ LARGE
  You cannot input more than 12 characters in LARGE size.
- If you select the title size “SMALL,” you have nine choices for the title position.
  If you select the title size “LARGE,” you have eight choices for the title position.

One cassette can have up to about 20 titles, if one title consists of five characters

However, if the cassette memory is full with date, photo and cassette label data, one cassette can have only up to about 11 titles with five characters each.
Cassette memory capacity is as follows:

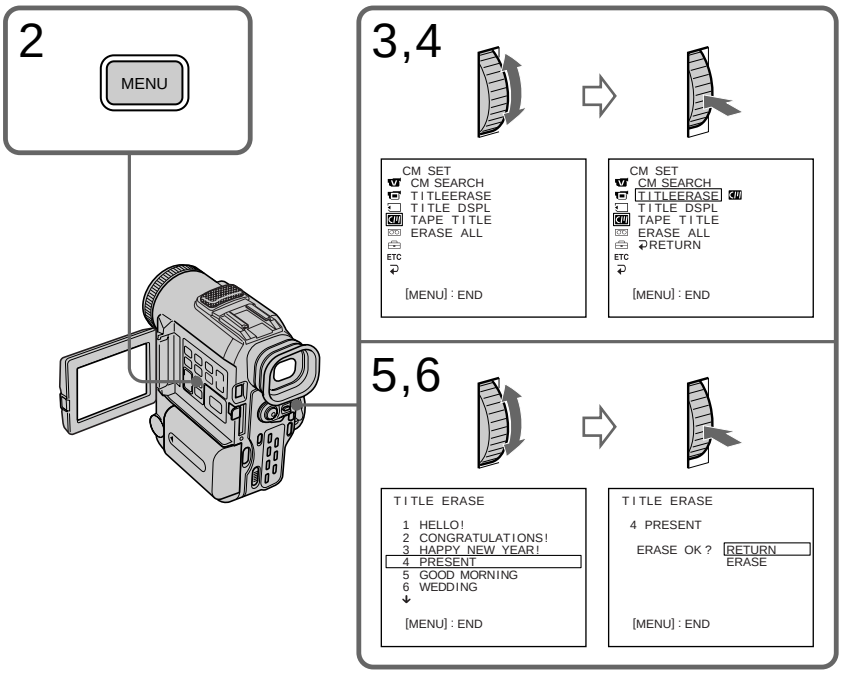
- Six date data (maximum)
- 12 photo data (maximum)
- One cassette label (maximum)

If the “ FULL” mark appears

The cassette memory is full. If you erase the title in the cassette, you can label it.

Erasing a title

(1) Set the POWER switch to VTR.
(2) Press MENU to display the menu.
(3) Turn the SEL / PUSH EXEC dial to select , then press the dial.
(4) Turn the SEL / PUSH EXEC dial to select TITLEERASE, then press the dial.
Title erase display appears.
(5) Turn the SEL / PUSH EXEC dial to select the title you want to erase, then press the dial.
"ERASE OK ?" indicator appears.
(6) Make sure the title is the one you want to erase, and turn the SEL / PUSH EXEC dial to select ERASE, then press the dial.



To cancel erasing

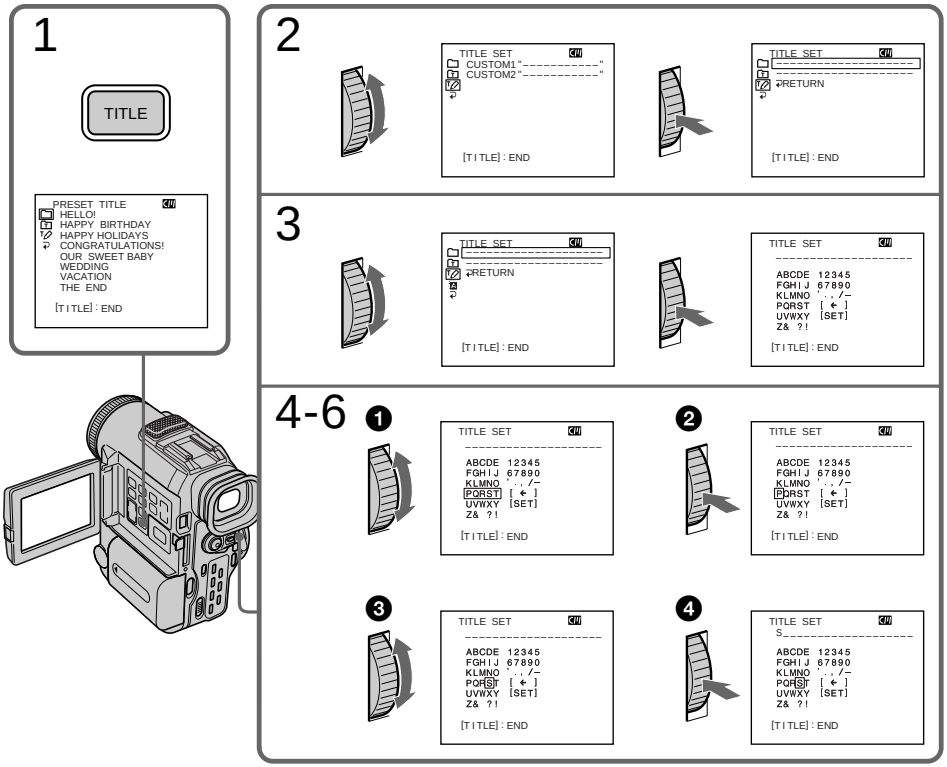
Select RETURN in step 6.

Making your own titles

CM only

You can make up to two titles and store them in cassette memory. Each title can have up to 20 characters.

(1) Press TITLE in the standby / playback / playback pause mode.
(2) Turn the SEL / PUSH EXEC dial to select , then press the dial.
(3) Turn the SEL / PUSH EXEC dial to select the first line (CUSTOM1) or second line (CUSTOM2), then press the dial.
(4) Turn the SEL / PUSH EXEC dial to select the column of the desired character, then press the dial.
(5) Turn the SEL / PUSH EXEC dial to select the desired character, then press the dial.
(6) Repeat steps 4 and 5 until you have selected all characters and completed the title.
(7) To finish making your own titles, turn the SEL / PUSH EXEC dial to select [SET], then press the dial. The title is stored in memory.
(8) Press TITLE to make the title menu disappear.



To change a title you have stored

In step 3, select CUSTOM1 or CUSTOM2, depending on which title you want to change, then press the SEL / PUSH EXEC dial. Turn the SEL / PUSH EXEC dial to select [←], then press the dial to delete the title. The last character is erased. Enter the new title as desired.

If you take five minutes or longer to enter characters in the standby mode while a cassette is in your camcorder

The power automatically goes off. The characters you have entered remain stored in memory. Set the POWER switch to OFF once and then to CAMERA again, then complete your title.
We recommend setting the playback or playback pause mode or removing the cassette so that your camcorder does not automatically turn off while you are entering title characters.

To erase a character

Turn the SEL / PUSH EXEC dial to select [←], then press the dial. The last character is erased.

To enter a space

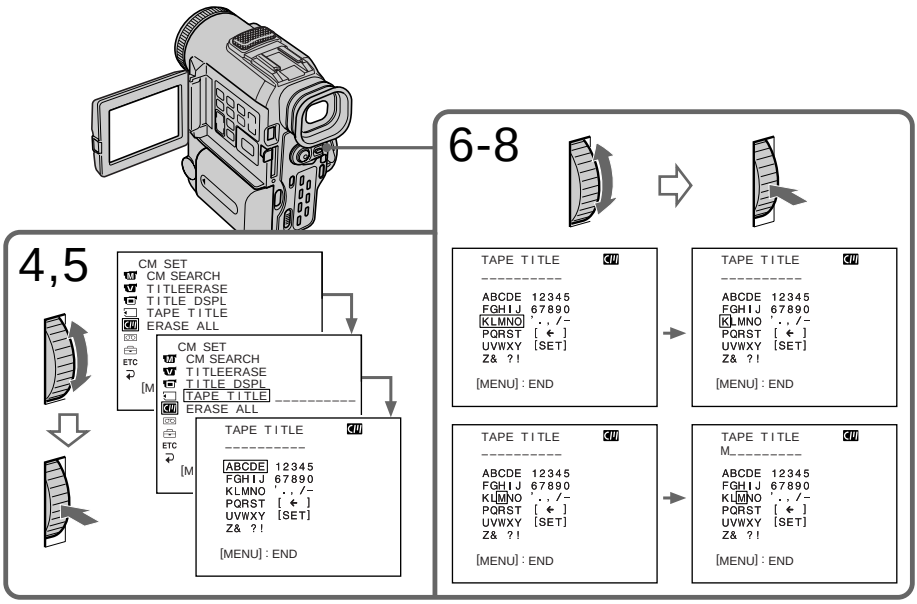
Select [Z& ? !], then select the blank part.

Labeling a cassette

CM only

If you use a tape with cassette memory, you can label a cassette. The label can consist of up to 10 characters and is stored in cassette memory. When you insert the labeled cassette and set the POWER switch to ON, the label is displayed for about five seconds.

(1) Insert the cassette you want to label.
(2) Set the POWER switch to VTR.
(3) Press MENU to display the menu.
(4) Turn the SEL / PUSH EXEC dial to select CM, then press the dial.
(5) Turn the SEL / PUSH EXEC dial to select TAPE TITLE, then press the dial. Tape title display appears.
(6) Turn the SEL / PUSH EXEC dial to select the column of the desired character, then press the dial.
(7) Turn the SEL / PUSH EXEC dial to select the desired character, then press the dial.
(8) Repeat steps 6 and 7 until you finish the label.
(9) Turn the SEL / PUSH EXEC dial to select [SET], then press the dial.
The label is stored in memory.



To enter a space

Select [Z& ?!], then select the blank part.

To change the label you have made

Insert the cassette to change the label, and operate in the same way to make a new label.

If you set the write-protect tab of the tape to lock

You cannot label the tape. Slide the write-protect tab to release the write protection.

If you have superimposed titles in the cassette

When the label is displayed, up to four titles also appear.

When the "-----" indicator has fewer than 10 spaces

The cassette memory is full.
The "-----" indicates the number of characters you can select for the label.

To erase a character

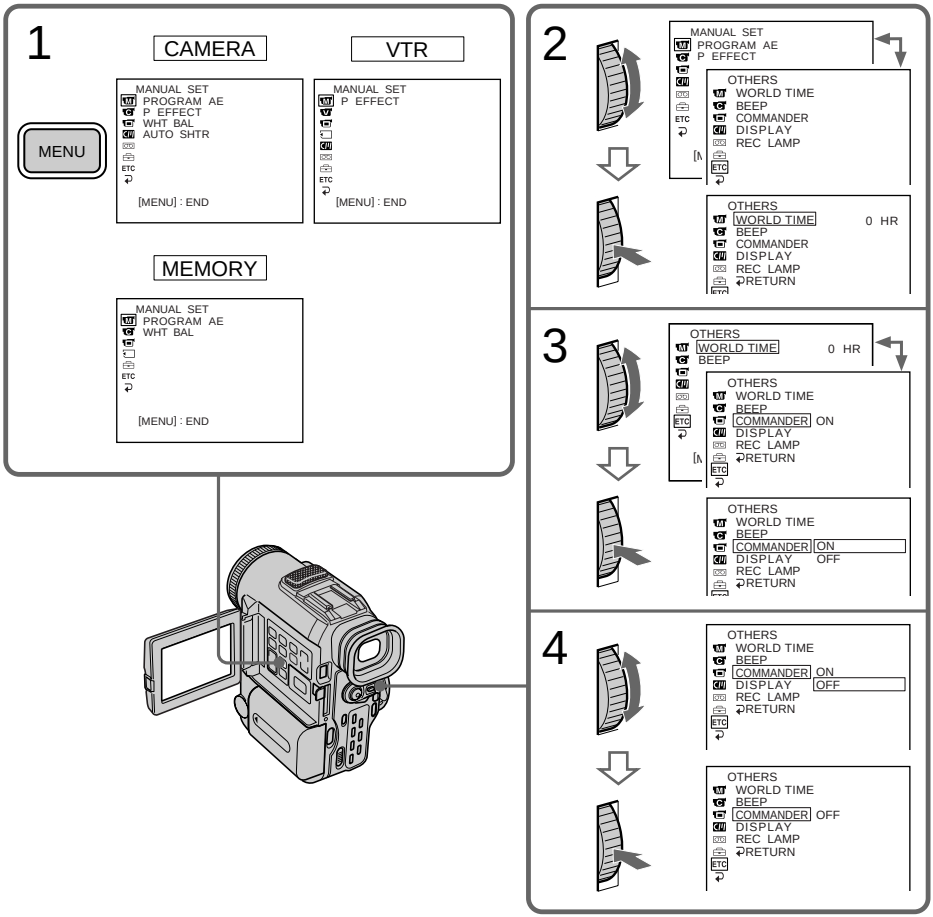
Turn the SEL / PUSH EXEC dial to select [←], then press the dial. The last character is erased.

Changing the menu settings

To change the mode settings in the menu settings, select the menu items with the SEL / PUSH EXEC dial. The default settings can be partially changed. First, select the icon, then the menu item and then the mode.

(1) In the standby, VTR, or MEMORY mode, press MENU.
(2) Turn the SEL / PUSH EXEC dial to select the desired icon, then press the dial to set.
(3) Turn the SEL / PUSH EXEC dial to select the desired item, then press the dial to set.
(4) Turn the SEL / PUSH EXEC dial to select the desired mode, then press the dial to set.
(5) If you want to change other items, select ↩ RETURN and press the dial, then repeat steps 2 to 4.

For details, see “Selecting the mode setting of each item” (p. 77).



To make the menu display disappear

Press MENU.

Menu items are displayed as the following icons:

- MANUAL SET
- CAMERA SET
- VTR SET
- LCD/VF SET
- MEMORY SET
- CM SET
- TAPE SET
- SETUP MENU
- OTHERS

Selecting the mode setting of each item

● is the default setting.

Menu items differ depending on the position of the POWER switch.
The LCD screen shows only the items you can operate at the moment.

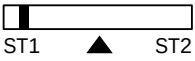
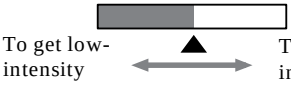
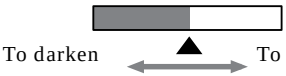
Icon/item	Mode	Meaning	POWER switch
PROGRAM AE		To suit your specific shooting requirement (p. 42).	CAMERA MEMORY
P EFFECT		To add special effects like those in films or on TV to images (p. 38).	VTR CAMERA
WHT BAL		To adjust the white balance (p. 34).	CAMERA MEMORY
AUTO SHTR	● ON	To automatically activate the electronic shutter when shooting in bright conditions.	CAMERA
	OFF	To deactivate the electronic shutter even when shooting in bright conditions.	
D ZOOM	● OFF	To deactivate the digital zoom. Up to 10× zoom is carried out.	CAMERA
	ON	To activate the digital zoom. More than 10× to 120× zoom is performed digitally (p. 19).	
16:9WIDE	● OFF	—	CAMERA
	ON	To record a 16:9 wide picture (p. 35).	
STEADYSHOT	● ON	To compensate for camera-shake.	CAMERA
	OFF	To cancel the SteadyShot function. Natural pictures are produced when shooting a stationary object with a tripod.	
N.S. LIGHT	● ON	To use the NightShot Light function (p. 22).	CAMERA MEMORY
	OFF	To cancel the NightShot Light function.	

Notes on the SteadyShot function

- The SteadyShot function will not correct excessive camera-shake.
- Attachment of a conversion lens (not supplied) may influence the SteadyShot function.

If you cancel the SteadyShot function

The SteadyShot OFF indicator appears. Your camcorder prevents excessive compensation for camera-shake.

Icon/item	Mode	Meaning	POWER switch
HiFi SOUND	● STEREO	To play back a stereo tape or dual sound track tape with main and sub sound (p. 115).	VTR
	1	To play back a stereo tape with the left sound or a dual sound tape with main sound.	
	2	To play back a stereo tape with the right sound or a dual sound track tape with sub sound.	
AUDIO MIX		To adjust the balance between the stereo 1 and stereo 2 (p. 66). 	VTR
LCD BRIGHT		To adjust the brightness on the LCD screen with the SEL / PUSH EXEC dial.	VTR CAMERA MEMORY
LCD B. L.	● BRT NORMAL	To set the brightness on the LCD screen normal.	VTR CAMERA MEMORY
	BRIGHT	To brighten the LCD screen.	
LCD COLOR		To adjust the color on the LCD screen with the SEL / PUSH EXEC dial. 	VTR CAMERA MEMORY
VF BRIGHT		To adjust the brightness on the viewfinder screen with the SEL / PUSH EXEC dial. 	VTR CAMERA MEMORY

When LCD B. L. is set to BRIGHT, the battery life is reduced by nearly 10%.
When you use power sources other than the battery pack, “BRIGHT” is automatically selected.

Icon/item	Mode	Meaning	POWER switch
CONTINUOUS	● OFF	Not to record continuously.	MEMORY
	ON	To record pictures continuously (p. 92).	
	MULTI SCRN	To record nine pictures continuously (p. 92).	
QUALITY	● SUPER FINE (SFN)	To record still pictures in the super fine image quality mode, using the "Memory Stick" (p. 87).	VTR MEMORY
	FINE (FINE)	To record still pictures in the fine image quality mode, using the "Memory Stick" (p. 87).	
	STANDARD (STD)	To record still pictures in the standard image quality mode, using the "Memory Stick" (p. 87).	
IMAGE SIZE	● 1152 × 864	To record 1152 × 864 size still pictures.	MEMORY
	640 × 480	To record 640 × 480 size still pictures.	
PRINT MARK	● OFF	To erase print marks on still pictures.	VTR MEMORY
	ON	To write a print mark on the recorded still images you want to print out later.	
PROTECT	● OFF	To release protections of still pictures.	VTR MEMORY
	ON	To protect selected still pictures against accidental erasure (p. 109).	
SLIDE SHOW		To play back all the images as a slide show (p. 108).	MEMORY
DELETE ALL		To delete all the unprotected images (p. 111).	MEMORY
FORMAT	● RETURN	To cancel formatting.	MEMORY
	FORMAT	To format an inserted "Memory Stick." 1. Select FORMAT with the SEL/PUSH EXEC dial, then press the dial. 2. Turn the SEL/PUSH EXEC dial to select FORMAT, then press the dial. 3. After "EXECUTE" appears, press the SEL/PUSH EXEC dial. "FORMATTING" appears during formatting. "COMPLETE" appears when formatting is finished.	
PHOTO SAVE		To duplicate still pictures (p. 101).	VTR

Note on IMAGE SIZE

If you set CONTINUOUS to MULTI SCRN or you set the POWER switch to VTR, IMAGE SIZE is automatically set to 640 × 480.

Notes on formatting

- Supplied or optional "Memory Stick"s have been formatted at factory. Formatting with this camcorder is not required.
- Do not turn the POWER switch or press any button while the display shows "FORMATTING."
- You cannot format the "Memory Stick" if the write-protect tab on the "Memory Stick" is set to LOCK.
- Format again if the message "⚠" appears.

Formatting erases all information on the "Memory Stick"

Check the contents of the "Memory Stick" before formatting:

- Formatting erases sample images on the "Memory Stick."
- Formatting erases the protected image data on the "Memory Stick."

Icon/item	Mode	Meaning	POWER switch
CM SEARCH	● ON	To search using cassette memory (p. 49).	VTR
	OFF	To search without using cassette memory.	
TITLEERASE		To erase the title you have superimposed (p. 71).	VTR CAMERA
TITLE DSPL	● ON	To display the title you have superimposed.	VTR
	OFF	Not to display the title.	
TAPE TITLE		To label a cassette (p. 74).	VTR CAMERA
ERASE ALL		To erase all the data in cassette memory.	VTR CAMERA
REC MODE	● SP	To record in the SP (Standard Play) mode.	VTR CAMERA
	LP	To increase the recording time to 1.5 times the SP mode.	
AUDIO MODE	● 12BIT	To record in the 12-bit mode (two stereo sounds).	VTR CAMERA
	16BIT	To record in the 16-bit mode (the one stereo sound with high quality).	

Notes on the LP mode

- When you record a tape in the LP mode on your camcorder, we recommend playing back the tape on your camcorder. When you play back the tape on other camcorders or VCRs, noise may occur in pictures or sound.
- When you record in the LP mode, we recommend using a Sony Excellence / Master mini DV cassette so that you can get the most out of your camcorder.
- You cannot make audio dubbing on a tape recorded in the LP mode. Use the SP mode for the tape to be audio-dubbed.
- When you record in the SP and LP modes on one tape or you record some scenes in the LP mode, the playback picture may be distorted or the time code may not be written properly between scenes.

Notes on AUDIO MODE

- You cannot dub audio sound on a tape recorded in the 16-bit mode.
- When playing back a tape recorded in the 16-bit mode, you cannot adjust the balance in AUDIO MIX.

Icon/item	Mode	Meaning	POWER switch
REMAIN	● AUTO	To display the remaining tape bar: • for about eight seconds after your camcorder is turned on and calculates the remaining amount of tape • for about eight seconds after a cassette is inserted and your camcorder calculates the remaining amount of tape • for about eight seconds after ► is pressed in VTR mode • for about eight seconds after DISPLAY is pressed to display the screen indicators • for the period of tape rewinding, forwarding or picture search in the VTR mode	VTR CAMERA
	ON	To always display the remaining tape indicator.	
DATA CODE	● DATE/CAM	To display date, time and various settings during playback.	VTR
	DATE	To display date and time during playback.	
CLOCK SET		To reset the date or time (p. 83).	CAMERA MEMORY
AUTO TV ON	● OFF	—	VTR CAMERA MEMORY
	ON	To automatically turn on a Sony TV when using the laser link function (p. 30).	
TV INPUT	● VIDEO1 VIDEO2 VIDEO3	To switch the video input on a Sony TV when using the laser link function (p. 30).	VTR CAMERA MEMORY
	OFF	—	
LTR SIZE	● NORMAL	To display selected menu items in normal size.	VTR CAMERA MEMORY
	2×	To display selected menu items at twice the normal size.	
DEMO MODE	● ON	To make the demonstration appear.	CAMERA
	OFF	To cancel the demonstration mode.	

Notes on DEMO MODE

- You cannot select DEMO MODE when a cassette is inserted in your camcorder.
- DEMO MODE is set to STBY (Standby) at factory and the demonstration starts about 10 minutes after you have set the POWER switch to CAMERA without a cassette inserted.
  To cancel the demonstration, insert a cassette, set the POWER switch to other than CAMERA, or set DEMO MODE to OFF.
- When NIGHTSHOT is set to ON, the NIGHTSHOT indicator appears on the LCD screen or in the viewfinder and you cannot select DEMO MODE in the menu settings.

Icon/item	Mode	Meaning	POWER switch
ETC WORLD TIME		To set the clock to the local time. Turn the SEL/PUSH EXEC dial to set a time difference. The clock changes by the time difference you set here. If you set the time difference to 0, the clock returns to the originally set time.	CAMERA MEMORY
BEEP	● MELODY	To output the melody when you start/stop recording or when an unusual condition occurs on your camcorder.	VTR CAMERA MEMORY
	NORMAL	To output the beep instead of the melody.	
	OFF	To cancel the melody and beep sound.	
COMMANDER	● ON	To activate the Remote Commander supplied with your camcorder.	VTR CAMERA MEMORY
	OFF	To deactivate the Remote Commander to avoid remote control misoperation caused by other VCR's remote control.	
DISPLAY	● LCD	To show the display on the LCD screen and viewfinder screen.	VTR CAMERA MEMORY
	V-OUT/LCD	To show the display on the TV screen, LCD screen and viewfinder screen.	
REC LAMP	● ON	To light up the camera recording lamp at the front of your camcorder.	CAMERA MEMORY
	OFF	To turn the camera recording lamp off so that person is not aware of the recording.	
DV EDITING		To duplicate the desired portion on a tape by simply selecting the scenes to edit, using other equipment connected with an i.LINK cable (DV connecting cable) (not supplied) (p. 56).	VTR

Note

If you press DISPLAY with DISPLAY set to V-OUT/LCD in the menu settings, the picture from a TV or VCR will not appear on the LCD screen even when your camcorder is connected to outputs on the TV or VCR.

When recording a close subject

When REC LAMP is set to ON, the red camera recording lamp on the front of the camcorder may reflect on the subject if it is close. In this case, we recommend you set REC LAMP to OFF.

In more than five minutes after removing the power source

The "AUDIO MIX," "COMMANDER," "HiFi SOUND," "PROGRAM AE" and "WHT BAL" items are returned to their default settings.
The other menu items are held in memory even when the power source is removed.

Resetting the date and time

The default clock setting is set to Tokyo time for the models sold in Japan, and New York time for other models.

If you do not use your camcorder for about six months, the date and time settings may be released (bars may appear) because the vanadium-lithium battery installed in your camcorder will have been discharged (p. 127).

First, set the year, then the month, the day, the hour and then the minute.

(1) Press MENU to display the menu in the standby mode.

(2) Turn the SEL / PUSH EXEC dial to select [toolbox], then press the dial.

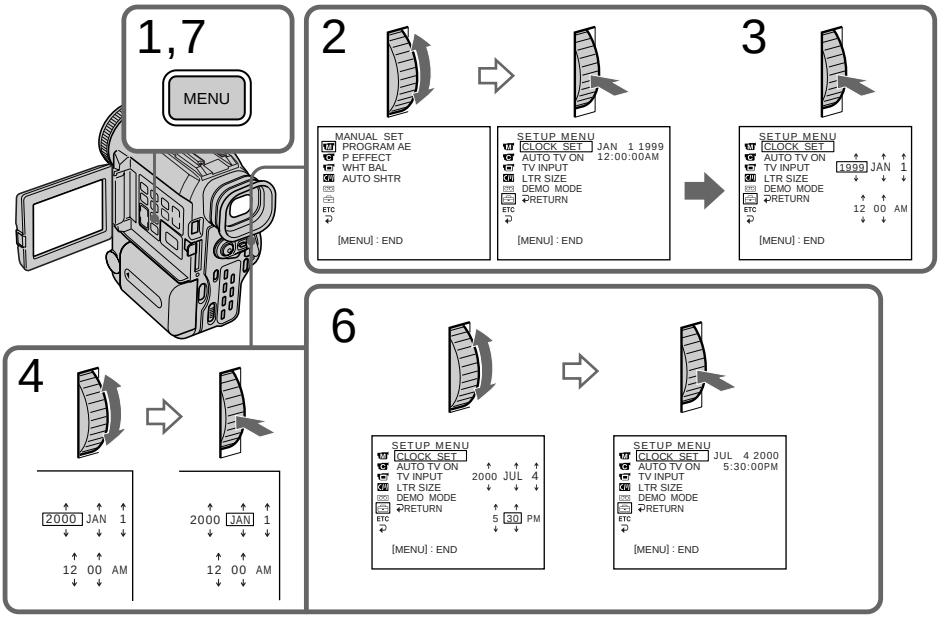
(3) Turn the SEL / PUSH EXEC dial to select CLOCK SET, then press the dial.

(4) Turn the SEL / PUSH EXEC dial to adjust the desired year, then press the dial.

(5) Set the month, day and hour by turning the SEL / PUSH EXEC dial and pressing the dial.

(6) Set the minute by turning the SEL / PUSH EXEC dial and pressing the dial by the time signal. The clock starts to move.

(7) Press MENU to make the menu settings disappear.



The year changes as follows:

1999 ⟷ 2000 ⟵ · · · · ⟶ 2029

If you do not set the date and time

"– –:– –:– –" is recorded on the data code of the tape and the "Memory Stick."

Note on the time indicator

The internal clock of your camcorder operates on a 12-hour cycle.

- 12:00 AM stands for midnight.
- 12:00 PM stands for noon.

Using a "Memory Stick" – introduction

You can record and play back still images on a "Memory Stick" supplied with your camcorder. You can easily play back, record or delete still images. You can exchange image data with other equipment such as a personal computer etc., using the Serial port adaptor for Memory Stick supplied with your camcorder or PC card adaptor for Memory Stick (not supplied).

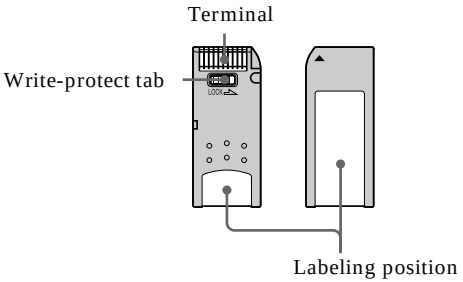
On file format (JPEG)

Your camcorder compresses image data in JPEG format (extension .jpg).

Typical image data file name

DSC00001.jpg

Before using a "Memory Stick"



- You cannot record or erase still images when the write-protect tab on the "Memory Stick" is set to LOCK.
- We recommend backing up important data.
- Image data may be damaged in the following cases:
  - If you remove the "Memory Stick," turn the power off, or detach the battery for replacement when the access lamp is flashing.
  - If you use "Memory Stick"s near magnets or magnet fields such as those of speakers and televisions.
- Prevent metallic objects or your finger from coming into contact with the metal parts of the connecting section.
- Stick its label on the labeling position.
- Do not bend, drop or apply strong shock to "Memory Stick"s.
- Do not disassemble or modify "Memory Stick"s.
- Do not let "Memory Stick"s get wet.
- Do not use or keep "Memory Stick"s in locations that are:
  - Extremely hot such as in a car parked in the sun or under the scorching sun.
  - Under direct sunlight.
  - Very humid or subject to corrosive gases.
- When you carry or store a "Memory Stick," put it in its case.

Formatting the supplied “Memory Stick”

Formatting with this camcorder is not required. The “Memory Stick” has been formatted in the FAT-format at factory.

“Memory Stick” supplied with your camcorder

- Sample images are recorded in the “Memory Stick” (p. 97). Note that these images will be deleted if you format the “Memory Stick.”
- Stick the supplied label on the labeling position to prevent the accidental erasure. As for the labeling position, see the illustration on the previous page.

“Memory Stick”s formatted by a computer

“Memory Stick”s formatted by Windows OS or Macintosh computers do not have a guaranteed compatibility with this camcorder.

Notes on image data compatibility

- Image data files recorded on “Memory Stick”s by your camcorder conform with the Design Rules for Camera File Systems universal standard established by the JEIDA (Japan Electronic Industry Development Association). You cannot play back on your camcorder still images recorded on other equipment (DCR-TRV890E / TRV900 / TRV900E or DSC-D700 / D770) that does not conform with this universal standard. (These models are not sold in some areas.)
- If you cannot use the “Memory Stick” that is used with other equipment, format it with this camcorder (p. 79). However, formatting erases all information on the “Memory Stick.”

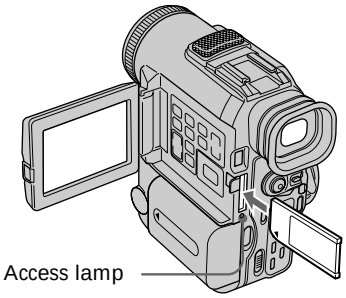
“Memory Stick” and MEMORY STICK are trademarks of Sony Corporation.

- Windows is a registered trademark licensed to Microsoft Corporation, registered in the U.S.A. and other countries.
- All other product names mentioned herein may be the trademarks or registered trademarks of their respective companies.

Furthermore, “™” and “®” are not mentioned in each case in this manual.

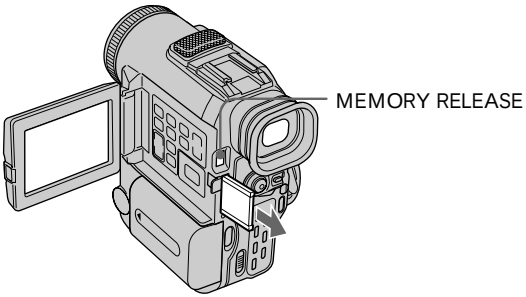
Inserting a "Memory Stick"

Insert a "Memory Stick" with the Sony logo pointing toward the LCD panel and the ◄ mark pointing inward.



To eject a "Memory Stick"

Press MEMORY RELEASE.



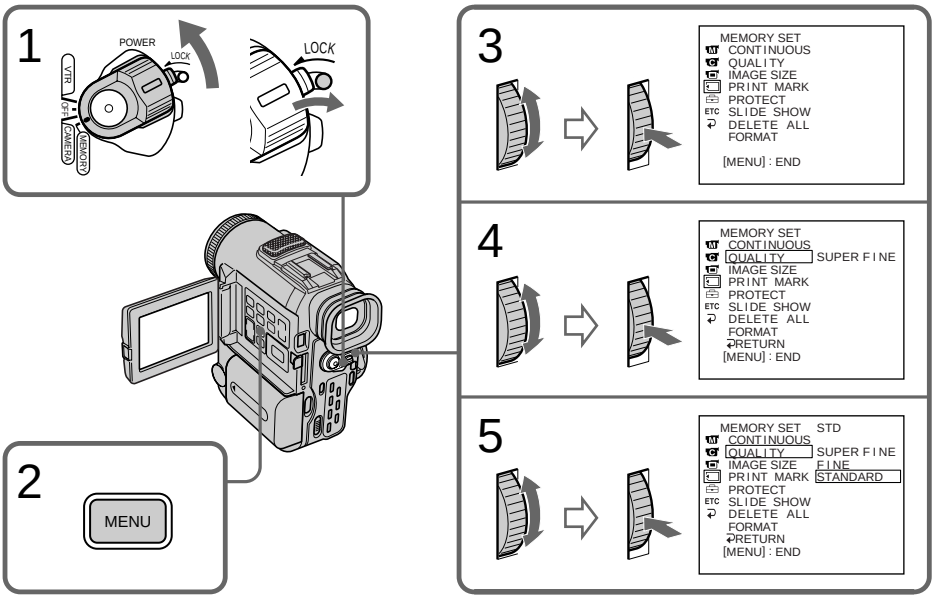
When the access lamp is lit or flashing

Never shake or strike your camcorder. Do not turn the power off , eject a "Memory Stick" or remove the battery pack. Otherwise, the image data breakdown may occur.

Selecting image quality mode

You can select image quality mode in still picture recording. Default setting is SUPER FINE.

(1) Set the POWER switch to VTR or MEMORY. Make sure that the LOCK switch is set to the right (unlock) position.
(2) Press MENU to display the menu.
(3) Turn the SEL / PUSH EXEC dial to select , then press the dial.
(4) Turn the SEL / PUSH EXEC dial to select QUALITY, then press the dial.
(5) Turn the SEL / PUSH EXEC dial to select the desired image quality, then press the dial.



Note

In some cases, changing the image quality mode may not affect the image quality, depending on the types of images you are shooting.

Image quality settings

Setting	Meaning
SUPER FINE (SFN)	This is the highest image quality in your camcorder. The number of still images you can record is less than FINE. The image is compressed to about 1/3. SFN appears on the screen.
FINE (FINE)	Use this mode when you want to record high quality images. The image is compressed to about 1/6. FINE appears on the screen.
STANDARD (STD)	This is the standard image quality. The image is compressed to about 1/10. STD appears on the screen.

Differences in image quality mode

Recorded images are compressed in JPEG format before being stored in memory. The memory capacity allotted to each image varies depending on the selected image quality mode. Details are shown in the table below. (The image size can be set to 1152 × 864 or 640 × 480.)

When the image size is set to 1152 × 864:

Image quality mode	Memory capacity
SUPER FINE	Approx. 600 KB
FINE	Approx. 300 KB
STANDARD	Approx. 200 KB

When the image size is set to 640 × 480:

Image quality mode	Memory capacity
SUPER FINE	Approx. 190 KB
FINE	Approx. 100 KB
STANDARD	Approx. 60 KB

Note on the image quality mode indicator

This is only displayed during recording.

Selecting the image size

You can select the image size from two settings: 1152 × 864 or 640 × 480. However, the image size in VTR mode is automatically set to "640 × 480," even if you have selected "1152 × 864."

(1) Set the POWER switch to MEMORY. Make sure that the LOCK switch is set to the right (unlock) position.
(2) Press MENU to display the menu.
(3) Turn the SEL / PUSH EXEC dial to select , then press the dial.
(4) Turn the SEL / PUSH EXEC dial to select IMAGE SIZE, then press the dial.
(5) Turn the SEL / PUSH EXEC dial to select the desired image size, then press the dial.
The indicator changes as follows:

1152 ↔ 640

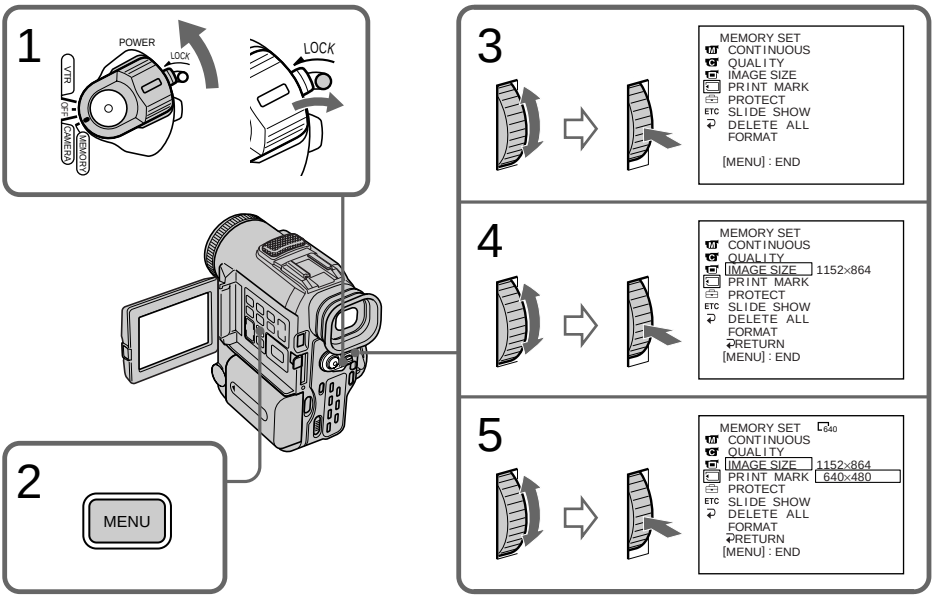


Image size settings

Setting	Meaning	Indicator	
		Recording	Playback
1152 × 864	To record 1152 × 864 size still pictures.	1152 SFN	1152
640 × 480	To record 640 × 480 size still pictures.	640 SFN	640

Note

When you play back the image recorded in 1152 x 864 size on other equipment which is not compatible with that size, all of the image may not be played back.

The approximate number of images you can record on a “Memory Stick”

The approximate number of images you can record on “Memory Stick” that is formatted using this camcorder varies depending on which image quality mode you select and the complexity of the subject.

4MB type (supplied):

Image size	640 × 480	1152 × 864
SUPER FINE (SFN)	20 images	6 images
FINE (FINE)	40 images	12 images
STANDARD (STD)	60 images	18 images

8MB type (not supplied):

Image size	640 × 480	1152 × 864
SUPER FINE (SFN)	40 images	12 images
FINE (FINE)	81 images	25 images
STANDARD (STD)	122 images	37 images

16MB type (not supplied):

Image size	640 × 480	1152 × 864
SUPER FINE (SFN)	82 images	25 images
FINE (FINE)	164 images	51 images
STANDARD (STD)	246 images	75 images

32MB type (not supplied):

Image size	640 × 480	1152 × 864
SUPER FINE (SFN)	164 images	52 images
FINE (FINE)	329 images	104 images
STANDARD (STD)	494 images	152 images

64MB type (not supplied):

Image size	640 × 480	1152 × 864
SUPER FINE (SFN)	329 images	104 images
FINE (FINE)	659 images	208 images
STANDARD (STD)	988 images	304 images

If you format a “Memory Stick”

All the data (including sample images) in the “Memory Stick” are erased.

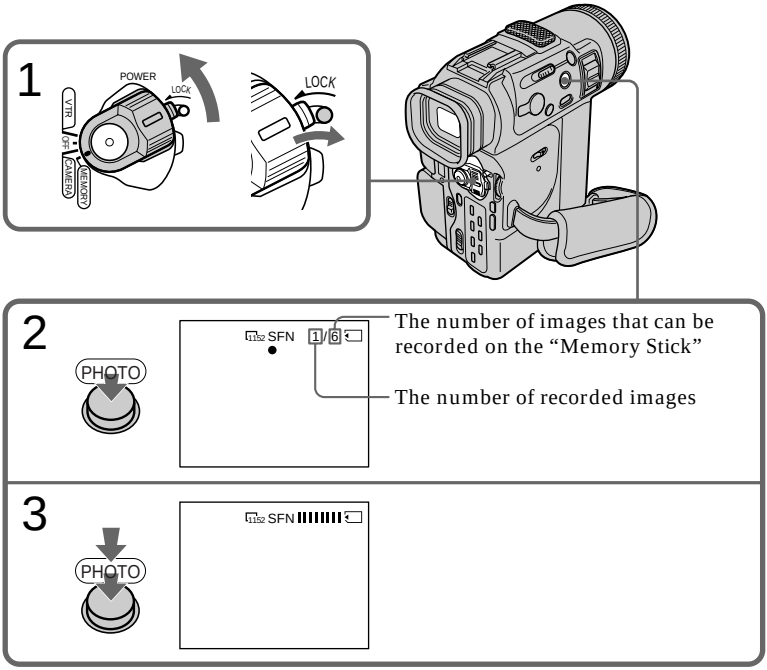
Recording still images on “Memory Stick”s – Memory photo recording

You can record still pictures on “Memory Stick”s.

Before operation

Insert a “Memory Stick” into your camcorder.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK switch is set to the right (unlock) position.
(2) Keep pressing PHOTO lightly until the desired still picture appears. The green ● mark stops flashing, then lights up. The brightness of the picture and focus are adjusted, being targeted for the middle of the picture and are fixed. Recording does not start yet.
(3) Press PHOTO deeper. The image displayed on the screen will be recorded on a “Memory Stick.” Recording is complete when the bar scroll indicator disappears.



When the POWER switch is set to MEMORY

The following functions do not work: wide TV mode, digital effect, picture effect, title, digital zoom, SteadyShot function, fader, low lux mode, and sports lesson mode. (The indicator flashes in the low lux or sports lesson mode.)

While you are recording a still image

You can neither turn off the power nor press PHOTO.

When you press PHOTO on the Remote Commander

Your camcorder immediately records the image that is on the screen when you press the button.

Notes

- When recording still images at step 2 with the PHOTO button pressed lightly, the image momentarily flickers. This is not a malfunction.
- Before you shoot in autofocus mode, check that the subject is in sharp focus.
- The brightness of the picture and focus are adjusted on the center portion of the image.

When recording in MEMORY mode

The angle of view is a little increased than one in CAMERA mode.

Recording images continuously

You can record still pictures continuously. Select one of the two modes described below before recording.

Continuous mode [a]

When the image size is set to 1152 × 864, you can record up to four pictures continuously.
When the image size is set to 640 × 480, you can record up to 16 pictures continuously.
The number of recorded photos in continuous mode depends on the capacity of the “Memory Stick.”

Multi screen mode (Image size is automatically set to 640 × 480) [b]

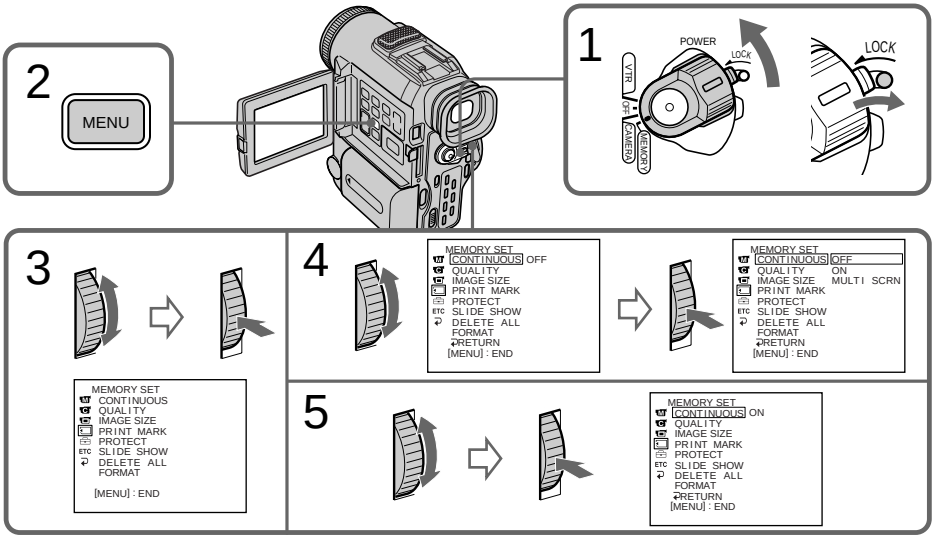
You can record nine still pictures continuously on a single page.

[a]

[b]

While pressing down PHOTO, the camcorder shoots still pictures continuously. The maximum recordable number of still pictures (1152 × 864: up to four pictures, 640 × 480: up to 16 pictures) is in accordance with the image size setting.
If you release the button during shooting, the recording stops even in progress.
When shooting with the self-timer function or the Remote Commander, the camcorder automatically records up to the maximum recordable number of still pictures.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK switch is set to the right (unlock) position.
(2) Press MENU to display the menu.
(3) Turn the SEL / PUSH EXEC dial to select , then press the dial.
(4) Turn the SEL / PUSH EXEC dial to select CONTINUOUS, then press the dial.
(5) Turn the SEL / PUSH EXEC dial to select the desired setting, then press the dial.



If the capacity of the “Memory Stick” becomes full

“ FULL” appears on the screen, and you cannot record still pictures on this “Memory Stick.”

Continuous shooting settings

Setting	Meaning (indicator on the screen)
OFF	Your camcorder shoots one image at a time. (no indicator)
ON	Your camcorder shoots up to 16 still images at about 0.5 sec intervals. ( )
MULTI SCRN	Your camcorder shoots nine still images at about 0.5 sec intervals and displays the images on a single page divided into nine boxes. In this mode, the still images are recorded at 640 × 480 size. ( )

The number of images in continuous shooting

The number of images you can shoot continuously varies depending on the image size and the capacity of the “Memory Stick.”

Image size	The number of images
640 × 480	up to 16 images
1152 × 864	up to 4 images

Note on using the video flash light (not supplied)

The video flash light does not work in the continuous or multi screen mode if you install it to the intelligent accessory shoe.

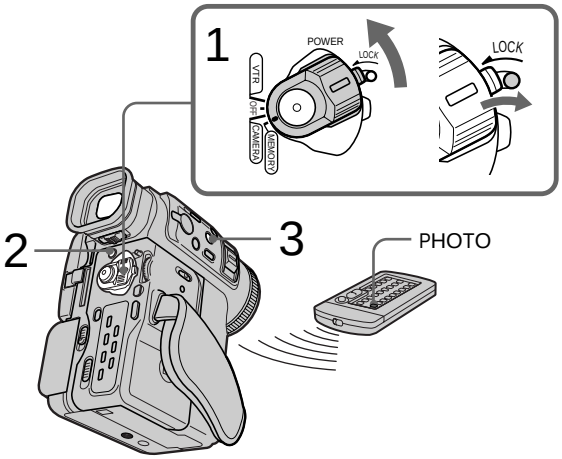
Self-timer memory photo recording

You can make a memory photo recording with the self-timer. This mode is useful when you want to record yourself.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK switch is set to the right (unlock) position.

(2) Press ⏲ (self-timer) in the standby mode. The ⏲ (self-timer) indicator appears on the LCD screen or in the viewfinder.

(3) Press PHOTO.
Self-timer starts counting down from 10 with a beep sound. In the last two seconds of the countdown, the beep sound gets faster, then recording starts automatically.



To cancel self-timer recording

Press ⏲ (self-timer) so that the ⏲ indicator disappears from the LCD or viewfinder screen. You cannot cancel the self-timer recording using the Remote Commander.

Note

The self-timer recording mode is automatically canceled when:
– Self-timer recording is finished.
– The POWER switch is set to OFF or VTR.

To check the picture to be recorded

You can check the picture with pressing the PHOTO button lightly, then press it deeper to capture.

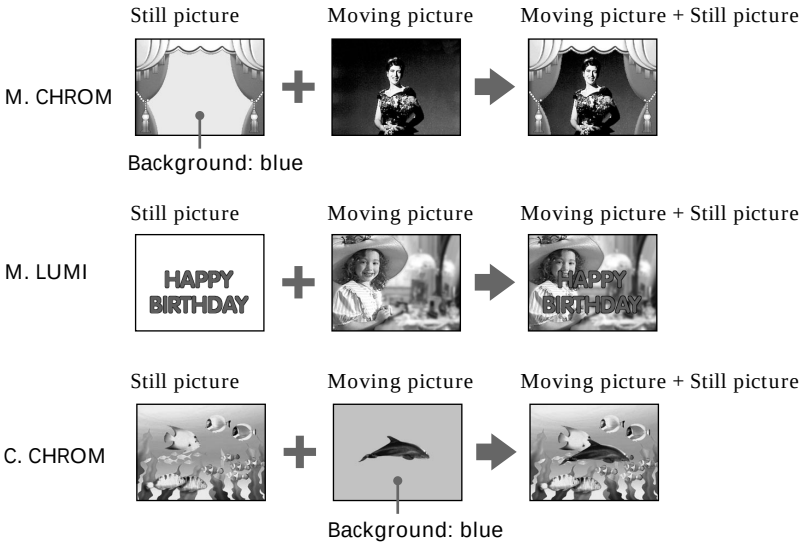
Superimposing a still picture in a “Memory Stick” on a moving picture – MEMORY MIX

You can superimpose a still picture you have recorded on a “Memory Stick” on the top of the moving picture you are recording.

M. CHROM (Memory chromakey)
You can swap a blue area of a still picture such as an illustration or a frame with a moving picture.

M. LUMI (Memory luminancekey)
You can swap a brighter area of a still picture such as a handwritten illustration or title with a moving picture. Record a title on a “Memory Stick” before a trip or event for convenience.

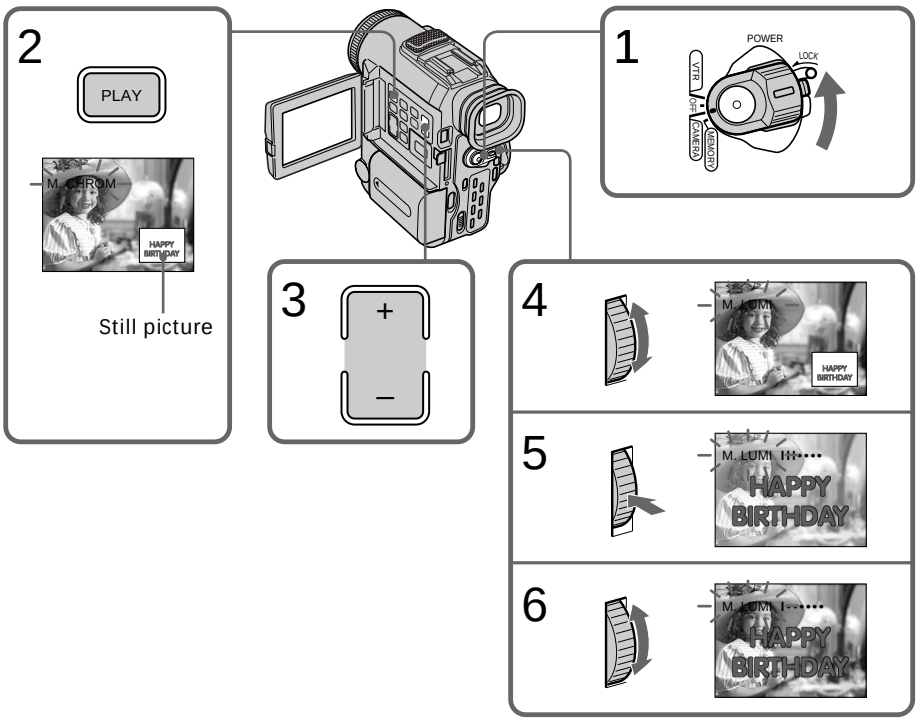
C. CHROM (Camera chromakey)
You can superimpose a moving picture on the top of a still picture such as a picture can be used as background. Shoot the subject against a blue background. The blue area of the moving picture will be swapped with a still picture.



Before operation

Insert a recorded “Memory Stick” and a mini DV tape to be recorded into your camcorder.

(1) Set the POWER switch to CAMERA.
(2) Press MEMORY PLAY in the standby mode.
The last recorded or last composed image appears on the lower part of the screen as a thumbnail image.
(3) Press MEMORY+/– or +/– on the Remote Commander to select the still picture you want to superimpose.
To see the previous image, press MEMORY – or – on the Remote Commander.
To see the next image, press MEMORY+ or + on the Remote Commander.
(4) Turn the SEL/PUSH EXEC dial to select the desired mode.
The mode changes as follows:
M. CHROM ↔ M. LUMI ↔ C. CHROM
(5) Press the SEL/PUSH EXEC dial.
The still picture is superimposed on the moving picture.
(6) Turn the SEL/PUSH EXEC dial to adjust the effect.
(7) Press START/STOP to start recording.



Items to be adjusted

M. CHROM	The color (blue) scheme of the area in the still picture which is to be swapped with a moving picture
M. LUMI	The color (bright) scheme of the area in the still picture which is to be swapped with a moving picture
C. CHROM	The color (blue) scheme of the area in the moving picture which is to be swapped with a still picture

The fewer bars there are on the screen, the stronger the effect.

To change the still picture to be superimposed

Press MEMORY +/– or +/– on the Remote Commander after step 6.

To change the mode setting

Press SEL/PUSH EXEC dial after step 6, and repeat the procedure from step 4.

To cancel M. CHROM/M. LUMI/C. CHROM

Press MEMORY PLAY.

During recording

You cannot change the mode setting.

The “Memory Stick” supplied with your camcorder has stored 20 images

– For M. CHROM: 18 images (such as a frame) DSC00001 to DSC00018
– For C. CHROM: two images (such as a background) DSC00019 to DSC00020

Sample images

Sample images stored in the “Memory Stick” supplied with your camcorder are protected (p. 109).

If a still picture to be superimposed has lots of white areas

The thumbnail image may not be displayed clearly.

Image data modified with personal computers or shot with other equipment

You may not be able to play them back with your camcorder.

Recording an image from a mini DV tape as a still image

Your camcorder can read moving picture data recorded on a mini DV tape and record it as a still image on a "Memory Stick." Your camcorder can also take in moving picture data through the input connector and record it as a still image on a "Memory Stick."

Before operation

Insert a recorded mini DV tape and a "Memory Stick" into your camcorder.

(1) Set the POWER switch to VTR.
(2) Press ►. The picture recorded on the mini DV tape is played back.
(3) Keep pressing PHOTO lightly until the picture from the mini DV tape freezes. "CAPTURE" appears on the LCD screen or in the viewfinder. Recording does not start yet.
(4) Press PHOTO deeper. The image displayed on the screen will be recorded on a "Memory Stick." Recording is complete when the bar scroll indicator disappears.

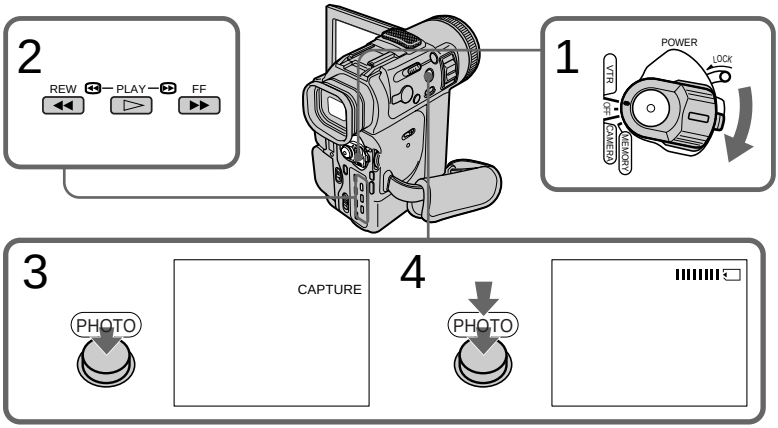


Image size of still pictures

Image size is automatically set to 640 × 480.

When the access lamp is lit or flashing

Never shake or strike the unit. As well do not turn the power off , eject a "Memory Stick" or remove the battery pack. Otherwise, the image data breakdown may occur.

If "⚠" appears on the LCD screen or in the viewfinder

The inserted "Memory Stick" is incompatible with your camcorder because its format does not conform with your camcorder. Check the format of the "Memory Stick."

If you press PHOTO lightly in the playback mode

Your camcorder stops momentarily.

Sound recorded on a mini DV tape

You cannot record the sound from a mini DV tape.

Titles have already recorded on mini DV tapes

You cannot record the titles on “Memory Stick”s. The title does not appear while you are recording a still picture with PHOTO.

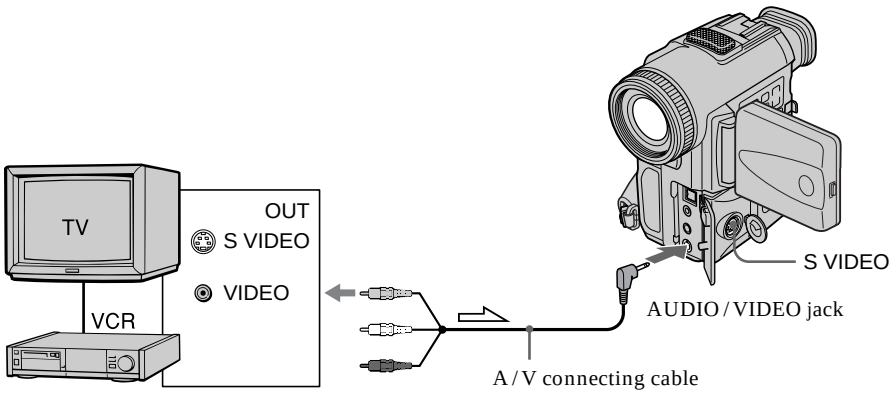
When you press PHOTO on the Remote Commander

Your camcorder immediately records the image that is on the screen when you press the button.

Recording a still image from other equipment

(1) Set the POWER switch to VTR and set DISPLAY in ETC to LCD in the menu settings.
(2) Play back the recorded tape, or turn the TV on to see the desired program. The picture from other equipment appears on the LCD screen or in the viewfinder.
(3) Follow steps 3 and 4 on page 98.

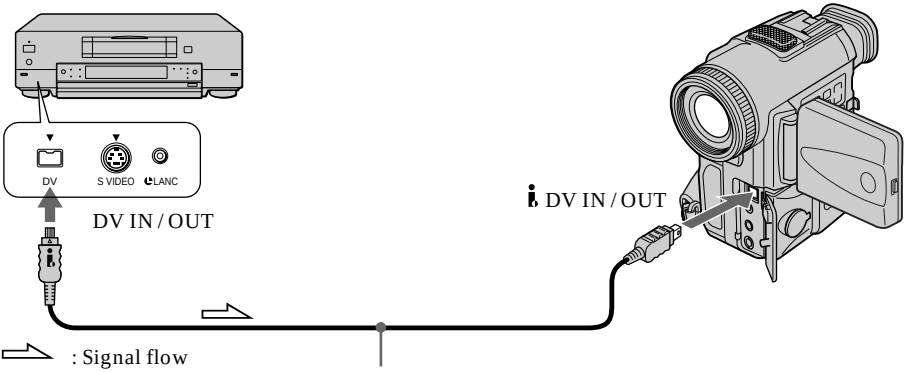
When recording the image through the AUDIO/VIDEO jack



: Signal flow

Connect the yellow plug of the A / V connecting cable supplied with your camcorder to the video jack on the VCR or the TV.

When recording the image through the i DV IN/OUT jack



Connect using an S video cable (not supplied) to obtain high-quality pictures

With this connection, you do not need to connect the yellow (video) plug of the A/V connecting cable.

Connect an S video cable (not supplied) to the S (S1) video jacks of both your camcorder and the VCR/TV.

This connection produces higher quality DV format pictures.

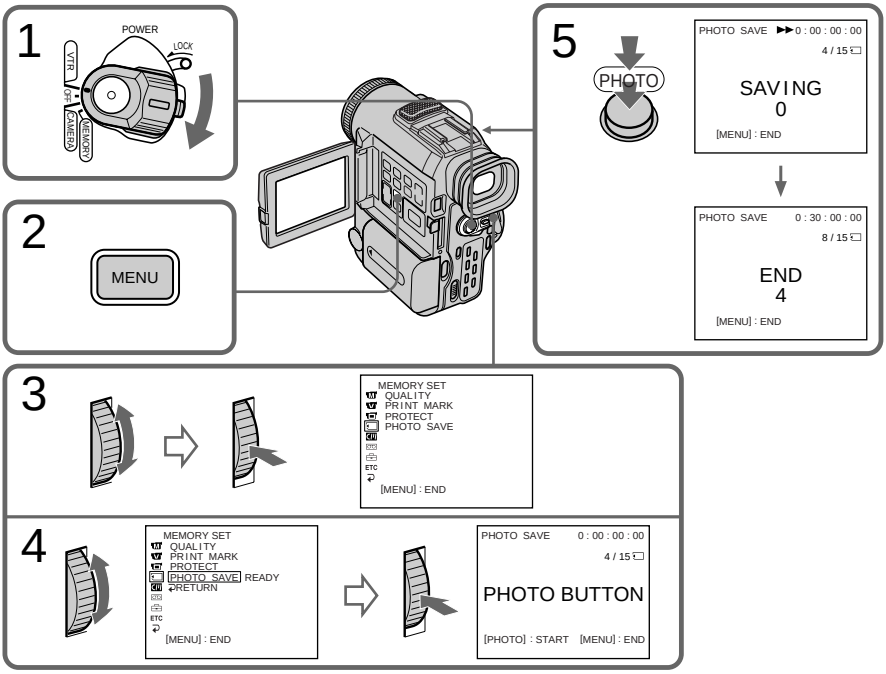
Copying still images from a mini DV tape – Photo save

Using the search function, you can automatically take in only still images from mini DV tapes and record them on a “Memory Stick” in sequence.

Before operation

- Insert a recorded mini DV tape into your camcorder and rewind the tape.
- Insert a “Memory Stick” into your camcorder.

(1) Set the POWER switch to VTR.
(2) Press MENU to display the menu.
(3) Turn the SEL / PUSH EXEC dial to select , then press the dial.
(4) Turn the SEL / PUSH EXEC dial to select PHOTO SAVE, then press the dial. “PHOTO BUTTON” appears on the LCD screen or in the viewfinder.
(5) Press PHOTO deeper. The still image from the mini DV tape is recorded on a “Memory Stick.” The number of still images copied is displayed. “END” is displayed when copying is completed.



To stop or end copying

Press MENU.

When the memory of the "Memory Stick" is full

"MEMORY FULL" appears on the LCD screen or in the viewfinder, and the copying stops. Insert another "Memory Stick" and repeat the procedure from step 2.

Image size of still pictures

Image size is automatically set to 640 × 480.

When the access lamp is lit or flashing

Never shake or strike your camcorder. As well do not turn the power off, eject a "Memory Stick" or remove the battery pack. Otherwise, the image data breakdown may occur.

To record all the images recorded on the mini DV tape

Rewind the tape all the way back and start copying.

If the write-protect tab on the "Memory Stick" is set to LOCK

"NOT READY" appears when you select the item in the menu settings.

When you change "Memory Stick"s in the middle of copying

Your camcorder resumes copying from the last image recorded on the previous "Memory Stick."

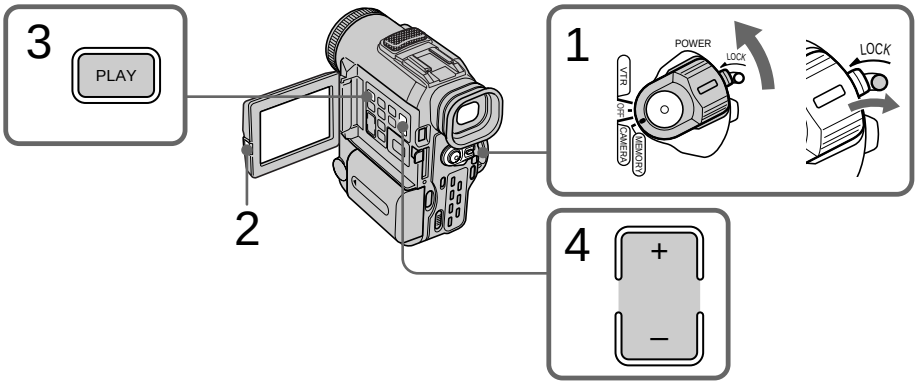
Viewing a still picture – Memory photo playback

You can play back still images recorded on a “Memory Stick.” You can also play back six images at a time by selecting the index screen.

Before operation

Insert a “Memory Stick” into your camcorder.

(1) Set the POWER switch to VTR or MEMORY. Make sure that the LOCK switch is set to the right (unlock) position.
(2) Press OPEN to open the LCD panel.
(3) Press MEMORY PLAY. The last recorded image is displayed.
(4) Press MEMORY + /– or + /– on the Remote Commander to select the desired still image. To see the previous image, press MEMORY – or – on the Remote Commander. To see the next image, press MEMORY + or + on the Remote Commander.



To stop memory photo playback

Press MEMORY PLAY again.

To play back recorded images on a TV screen

- Connect your camcorder to the TV with the A / V connecting cable supplied with your camcorder before operation.
- When operating memory photo playback on a TV or on the LCD screen, the image quality may appear to have deteriorated. This is not a malfunction. The image data is as good as ever.
- Turn the audio volume of the TV down before operation, or noise (howling) may be output from the TV speakers.
- The message “ NO FILE” appears when no image is recorded on the “Memory Stick.”

Image data modified with personal computers or shot with other equipment

You may not be able to play them back with your camcorder.

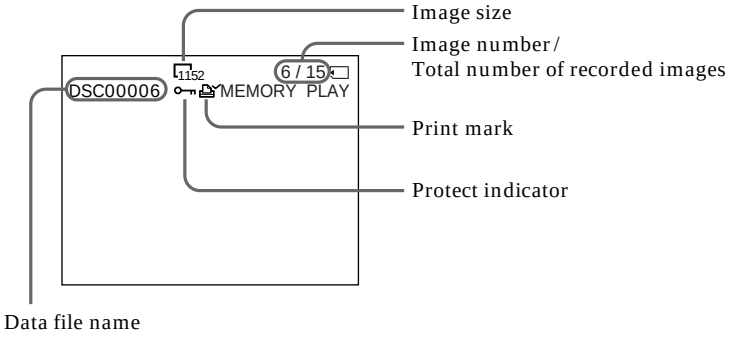
Note on the date/time indicator

Recording date / time is not displayed, however, it is automatically recorded on the “Memory Stick.” You can check the recording date / time while in memory playback mode by pressing DATA CODE on the Remote Commander.

Note

The pictures taken on the “Memory Stick” are not recorded with various settings.

Screen indicators during still image playback

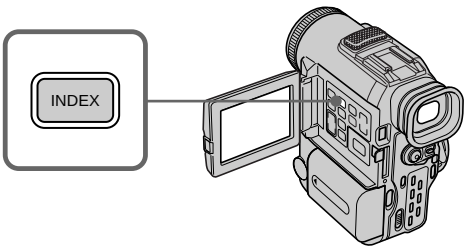


Playing back six recorded images at a time (index screen)

You can play back six recorded images at a time. This function is especially useful when searching for a particular image.

(1) Set the POWER switch to VTR or MEMORY. Make sure that the LOCK switch is set to the right (unlock) position.

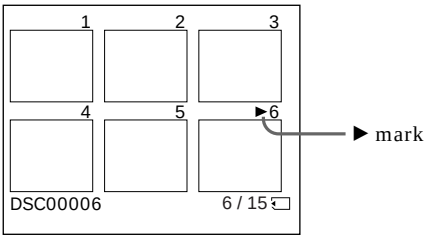
(2) Press MEMORY INDEX to display the index screen.



A red ▶ mark appears above the image that is displayed before changing to the index screen mode.

MEMORY – : to display the previous six images

MEMORY + : to display the following six images



To return to the normal playback screen (single screen)

Press MEMORY +/– to move the ▶ mark to the image you want to display on full screen, then press MEMORY PLAY.

Files modified with personal computers

These files may not be displayed on the index screen. Image files shot with other equipment may not be displayed on the index screen either.

Note

When displaying the index screen, the number appears above each image. This indicates the order in which images are recorded on the “Memory Stick.” These numbers are different from the data file names.

Viewing the recorded images using a personal computer

The image data recorded with your camcorder is compressed in the JPEG format. If you use the application software, “PictureGear 3.2Lite” supplied with your camcorder, you can see images recorded on a “Memory Stick” on a computer screen. Use the serial port adaptor for Memory Stick supplied with your camcorder, the Memory Stick / PC card kit or PC card adaptor for Memory Stick (not supplied) for this operation. For detailed instructions on operation, refer to the operating instructions of the serial port adaptor, Memory Stick / PC card kit or PC card adaptor for Memory Stick and application software.

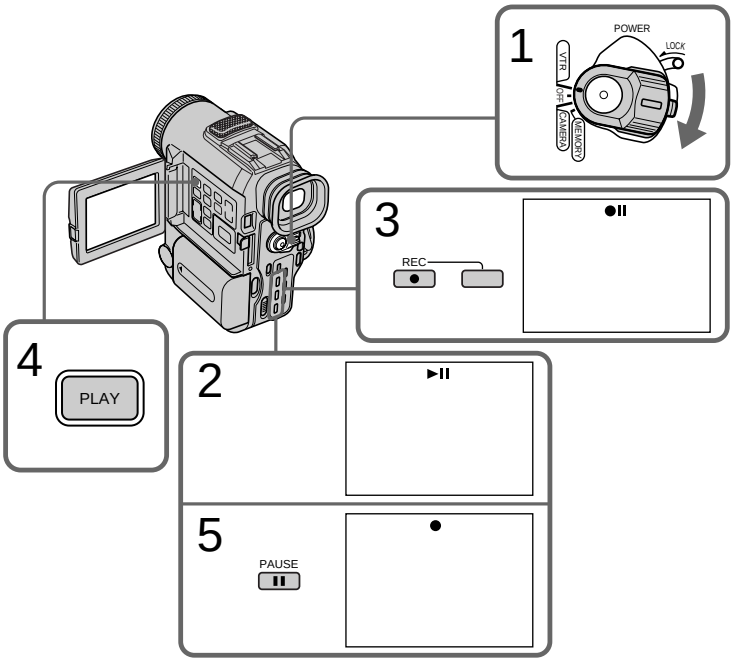
Copying the image recorded on “Memory Stick”s to mini DV tapes

You can copy still images or titles recorded on a “Memory Stick” and record them to a mini DV tape.

Before operation

Insert a mini DV tape for recording and a “Memory Stick” into your camcorder.

(1) Set the POWER switch to VTR.
(2) Using the video control buttons, search a point where you want to record the desired still image. Set the mini DV tape to playback pause mode.
(3) Press ● REC and the button on its right simultaneously on your camcorder. The mini DV tape is set to the recording pause mode.
(4) Press MEMORY PLAY to play back the still image you want to copy.
(5) Press ❚❚ to start recording and press ❚❚ again to stop.
(6) If you have more to copy, repeat steps 4 and 5.



To stop copying in the middle

Press ■.

During copying

You cannot operate the following buttons:
MEMORY PLAY, MEMORY INDEX, MEMORY DELETE, MEMORY +, and MEMORY –.

Note on the index screen
You cannot record the index screen.

Image data modified with personal computers or shot with other equipment
You may not be able to copy them with your camcorder.

If you press DISPLAY in the standby or recording mode
You can see memory playback and the file name indicators in addition to the indicators pertinent to mini DV tapes, such as the time code indicator.

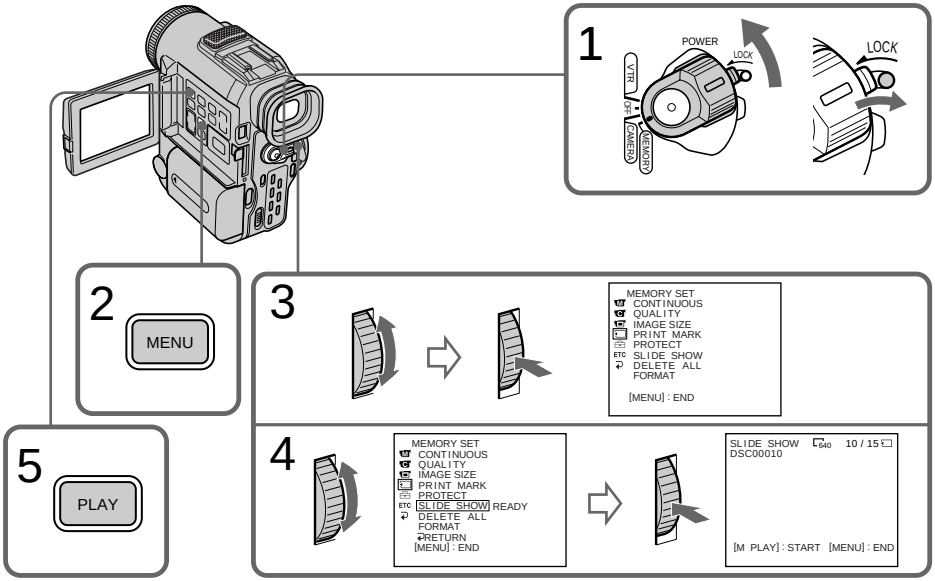
Playing back images continuously – SLIDE SHOW

You can automatically play back images in sequence. This function is useful especially when checking recorded images or during a presentation.

Before operation

Insert a “Memory Stick” into your camcorder.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK switch is set to the right (unlock) position.
(2) Press MENU to display the menu.
(3) Turn the SEL / PUSH EXEC dial to select , then press the dial.
(4) Turn the SEL / PUSH EXEC dial to select SLIDE SHOW, then press the dial.
(5) Press MEMORY PLAY. Your camcorder plays back the images recorded on a “Memory Stick” in sequence.



To stop or end the slide show

Press MENU.

To pause during a slide show

Press MEMORY PLAY.

To start the slide show from a particular image

Select the desired image using MEMORY + / – buttons before step 2.

To view the recorded images on TV

Connect your camcorder to a TV with the A / V connecting cable supplied with your camcorder before operation.

If you change the “Memory Stick” during operation

The slide show does not operate. If you change the “Memory Stick,” be sure to follow the steps again from the beginning.

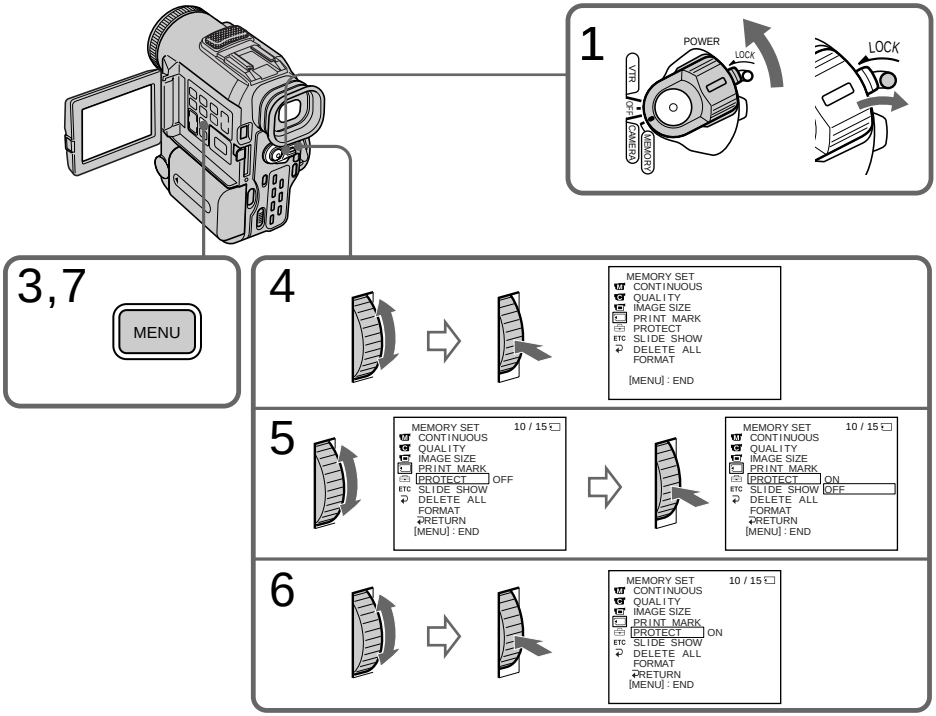
Preventing accidental erasure – Image protection

To prevent accidental erasure of important images, you can protect selected images.

Before operation

Insert a “Memory Stick” into your camcorder.

(1) Set the POWER switch to MEMORY or VTR. Make sure that the LOCK switch is set to the right (unlock) position.
(2) Play back the image you want to protect (p. 103).
(3) Press MENU to display the menu.
(4) Turn the SEL / PUSH EXEC dial to select , then press the dial.
(5) Turn the SEL / PUSH EXEC dial to select PROTECT, then press the dial.
(6) Turn the SEL / PUSH EXEC dial to select ON, then press the dial.
(7) Press MENU to erase the menu display. The “” mark is displayed beside the data file name of the protected image.



To cancel image protection

Select OFF in step 6, then press the SEL / PUSH EXEC dial.

Note

Formatting erases all information on the “Memory Stick,” including the protected image data. Check the contents of the “Memory Stick” before formatting.

If the write-protect tab on the “Memory Stick” is set to LOCK

You cannot carry out image protection.

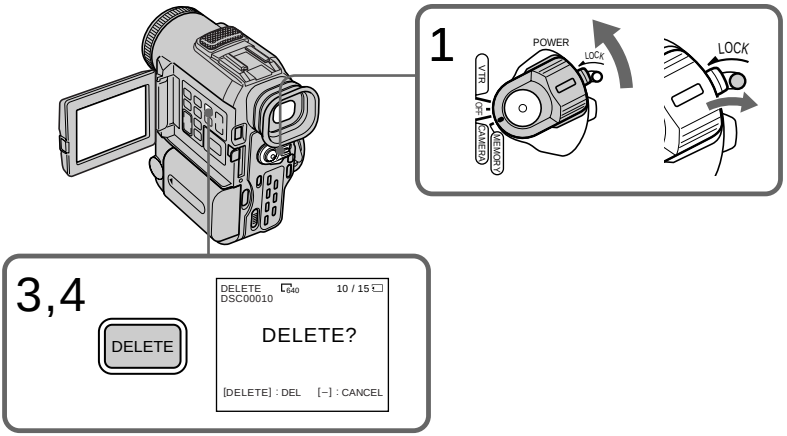
Deleting images

You can delete images stored in a “Memory Stick.”

Deleting selected images

Before operation
Insert a “Memory Stick” into your camcorder.

(1) Set the POWER switch to MEMORY or VTR. Make sure that the LOCK switch is set to the right (unlock) position.
(2) Play back the image you want to delete (p. 103).
(3) Press MEMORY DELETE. “DELETE?” appears on the LCD screen or in the viewfinder.
(4) Press MEMORY DELETE again. The selected image is deleted.



To cancel deleting an image

Press MEMORY – in step 4.

To delete an image displayed on the index screen

Press MEMORY +/– to move the ▶ indicator to the desired image and follow steps 3 and 4.

Notes

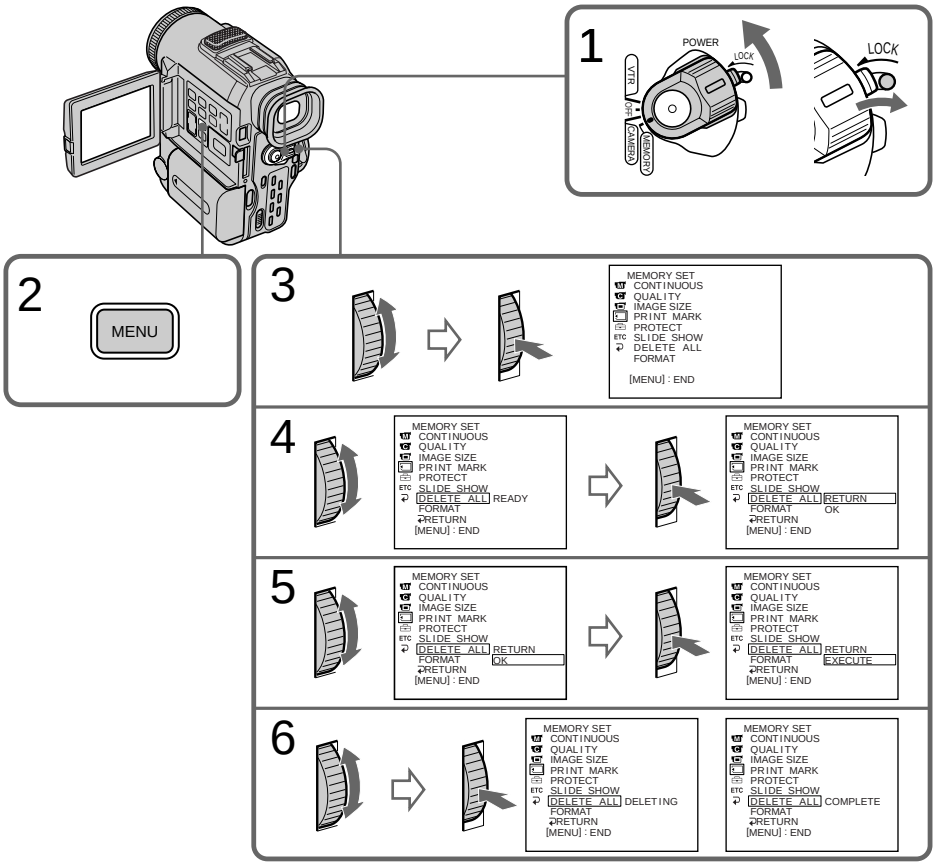
- To delete a protected image, first cancel image protection.
- Once you delete an image, you cannot restore it. Check the images to be deleted carefully before deleting them.
- You cannot delete images if the write-protect tab on a “Memory Stick” is set to LOCK.

Deleting all the images

You can delete all the unprotected images in a “Memory Stick.”

Before operation
Insert a “Memory Stick” into your camcorder.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK switch is set to the right (unlock) position.
(2) Press MENU to display the menu.
(3) Turn the SEL / PUSH EXEC dial to select , then press the dial.
(4) Turn the SEL / PUSH EXEC dial to select DELETE ALL, then press the dial.
(5) Turn the SEL / PUSH EXEC dial to select OK, then press the dial. “OK” changes to “EXECUTE.”
(6) Turn the SEL / PUSH EXEC dial to select EXECUTE, then press the dial. “DELETING” appears on the LCD screen or in the viewfinder. When all the unprotected images are deleted, “COMPLETE” is displayed.



To cancel deleting all the images in the "Memory Stick"

Select RETURN in step 4, then press the SEL/PUSH EXEC dial.

While "DELETING" appears

Do not turn the POWER switch or press any buttons.

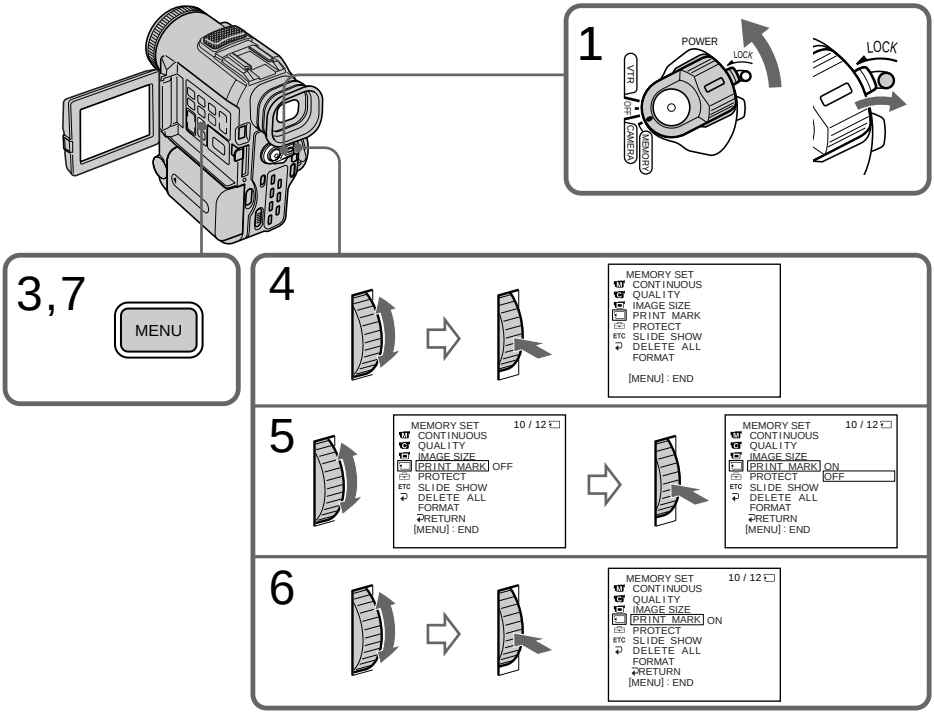
Writing a print mark – PRINT MARK

You can specify the recorded still image to print out. This function is useful for printing out still images later.
Your camcorder conforms with the DPOF (Digital Print Order Format) standard for specifying the still images to print out.

Before operation

Insert a "Memory Stick" into your camcorder.

(1) Set the POWER switch to MEMORY or VTR. Make sure that the LOCK switch is set to the right (unlock) position.
(2) Play back the image to be printed out (p. 103).
(3) Press MENU to display the menu.
(4) Turn the SEL / PUSH EXEC dial to select , then press the dial.
(5) Turn the SEL / PUSH EXEC dial to select PRINT MARK, then press the dial.
(6) Turn the SEL / PUSH EXEC dial to select ON, then press the dial.
(7) Press MENU to erase the menu display. The "" mark is displayed beside the data file name of the image with a print mark.



To cancel writing print marks

Select OFF in step 6, then press the SEL / PUSH EXEC dial.

If the write-protect tab on the "Memory Stick" is set to LOCK

You cannot write print marks on still images.

Usable cassettes

Selecting cassette types

You can use the Mini DV mini DV cassette only*. You cannot use any other 8 mm, Hi8 Hi8, Digital8, VHS VHS, VHSC VHSC, S-VHS S-VHS, S-VHSC S-VHSC, Betamax, ED Beta ED Betamax or DV DV cassette.

* There are two types of mini DV cassettes: with cassette memory and without cassette memory. Tapes with cassette memory have CM (Cassette Memory) mark. Sony recommends that you use a tape with CM mark to enjoy your camcorder fully.

The IC memory is built in the cassette with cassette memory. Using this IC memory, your camcorder can read, write, and search data such as the date of recording or titles. The functions using the cassette memory require successive signals recorded on the tape. If the tape has a blank portion in the beginning or between the recorded portions, a title may not be displayed properly or the search functions may not work correctly.
Not to make any blank portion on the tape, press END SEARCH to return to the end of the recorded portion before you begin the next recording when:
– You have ejected the cassette while recording.
– You have played back the tape in VTR mode.
If there is a blank portion or discontinuous signal on your tape, re-record from the beginning to the end of the tape concerning above.
When you record, using a digital video camera recorder without a cassette memory function, on a tape recorded by one with the cassette memory function, the same result may occur.

CM 4K mark on the cassette
The memory capacity of tapes marked with CM 4K is 4KB. Your camcorder can accommodate up to 16KB. 16KB tape is marked with CM 16K.

When you play back

Copyright signal

When playing back

Using any other video camera recorder, you cannot record on a tape that has recorded a copyright control signals for copyright protection of software which is played back on your camcorder.

When you record

You cannot record software on your camcorder that contains copyright control signals for copyright protection of software.
“COPY INHIBIT” appears on the LCD screen, in the viewfinder or on the TV screen if you try to record such software.
Your camcorder does not record copyright control signals on the tape when it records.

Audio mode

12-bit mode: The original sound can be recorded in stereo 1, and the new sound in stereo 2 in 32 kHz. The balance between stereo 1 and stereo 2 can be adjusted by selecting AUDIO MIX in the menu settings during playback. Both sounds can be played back.

16-bit mode: A new sound cannot be recorded but the original sound can be recorded in high quality. Moreover, it can also play back sound recorded in 32 kHz, 44.1 kHz or 48 kHz. When playing back a tape recorded in the 16-bit mode, 16BIT indicator appears on the LCD screen or in the viewfinder.

When you play back a dual sound track tape

When you play back a dual sound track tape recorded in a stereo system, set HiFi SOUND to the desired mode in the menu settings (p. 76).

Sound from speaker

HiFi SOUND mode	Playing back a stereo tape	Playing back a dual sound track tape
STEREO	Stereo	Main sound and sub sound
1	Left sound	Main sound
2	Right sound	Sub sound

You cannot record dual sound programs on your camcorder.

Notes on the mini DV cassette

When affixing a label on the mini DV cassette

Be sure to affix a label only on the locations as illustrated below [a] so as not to cause malfunction of your camcorder.

After using the mini DV cassette

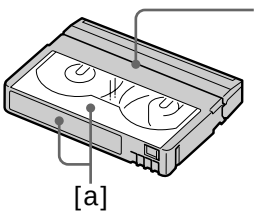
Rewind the tape to the beginning, put the cassette in its case, and store it in an upright position.

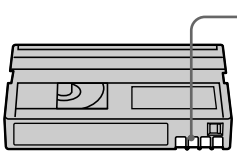
If the cassette memory function does not work

Reinsert a cassette a few times. The gold-plated connector of mini DV cassettes may be dirty or dusty.

Cleaning gold-plated connector

If the gold-plated connector of mini DV cassettes is dirty or dusty, you may not operate the function using cassette memory. Clean up the gold-plated connector with cotton-wool swab, about every 10 times ejection of a cassette. [b]





Troubleshooting

If you run into any problem using your camcorder, use the following table to troubleshoot the problem. If the problem persists, disconnect the power source and contact your Sony dealer. If "C:□□:□□" appears on the LCD screen or in the viewfinder, the self-diagnosis display function has worked. See page 122.

In the recording mode

Symptom	Cause and/or Corrective Actions
START/STOP does not operate.	• The POWER switch is not set to CAMERA. → Set it to CAMERA. (p. 15) • The tape has run out. → Rewind the tape or insert a new one. (p. 14, 28) • The write-protect tab on the cassette is set to expose the red mark. → Use a new tape or slide the tab. (p. 14) • The tape is stuck to the drum (moisture condensation). → Remove the cassette and leave your camcorder for at least one hour to acclimatize. (p. 126)
Recording stops in a few seconds.	• START/STOP MODE is set to 5SEC or ⏚. → Set it to ⏚. (p. 20)
The power goes off.	• While being operated in CAMERA mode, your camcorder has been in the standby mode for more than five minutes. → Set the POWER switch to OFF and then to CAMERA again. (p. 16) • The battery pack is dead or nearly dead. → Install a charged battery pack. (p. 10, 11)
The image on the viewfinder screen is not clear.	• The viewfinder lens is not adjusted. → Adjust the viewfinder lens. (p. 18)
The SteadyShot function does not work.	• STEADYSHOT is set to OFF in the menu settings. → Set it to ON. (p. 76)
The autofocusing function does not work.	• The camcorder is in manual focus mode. → Turn to auto focus mode. (p. 45) • Shooting conditions are not suitable for autofocus. → Adjust focus manually. (p. 45)
The fader function does not work.	• START/STOP MODE is set to 5SEC or ⏚. → Set it to ⏚. (p. 20) • The digital effect function is working. → Cancel it. (p. 39)
The ⊗ indicator flashes on the LCD screen or in the viewfinder.	• The video heads may be dirty. → Clean the heads using the Sony DVM12CL cleaning cassette (not supplied). (p. 127)
A vertical band appears when you shoot a subject such as lights or a candle flame against a dark background.	• The contrast between the subject and background is too high. This is not a malfunction.
A vertical band appears when you shoot a very bright subject.	• This is not a malfunction.

Symptom	Cause and/or Corrective Actions
Some tiny white spots appear on the LCD screen or in the viewfinder.	• Slow shutter, low lux or NightShot +Slow shutter mode is activated. This is not a malfunction.
An unknown picture is displayed on the LCD screen or in the viewfinder.	• If 10 minutes elapse after you set the POWER switch to CAMERA or DEMO MODE is set to ON in the menu settings without a cassette inserted, your camcorder automatically starts the demonstration. → Insert a cassette. The demonstration stops. You can also cancel DEMO MODE. (p. 81)
The picture is recorded in incorrect or unnatural colors.	• NIGHTSHOT is set to ON. → Set it to OFF. (p. 22)
Picture appears too bright, and the subject does not appear on the LCD screen or in the viewfinder.	• NIGHTSHOT is set to ON in a bright place. → Set it to OFF, or use the NightShot function in a dark place. (p. 22)
The click of the shutter does not sound.	• BEEP is set to OFF in the menu settings. → Set it to MELODY or NORMAL. (p. 76)
A horizontal black band appears when shooting a TV screen or computer screen.	• Set STEADYSHOT to OFF in the menu settings. (p. 76)

In the playback mode

Symptom	Cause and/or Corrective Actions
The tape does not move when a video control button is pressed.	• The POWER switch is not set to VTR. → Set it to VTR. (p. 25) • The tape has run out. → Rewind the tape. (p. 28)
The playback picture is not clear or does not appear.	• The television's video channel is not adjusted correctly. → Adjust it.
There are horizontal lines on the picture or the playback picture is not clear or does not appear.	• The video head may be dirty. → Clean the heads using the Sony DVM12CL cleaning cassette (not supplied). (p. 127)
No sound or only a low sound is heard when playing back a tape.	• The volume is turned to minimum. → Turn up the volume. (p. 25) • AUDIO MIX is set to ST2 in the menu settings. → Adjust AUDIO MIX. (p. 76)
The title search function does not work.	• The tape has no cassette memory. → Use a tape with cassette memory. (p. 49, 114) • CM SEARCH is set to OFF in the menu settings. → Set it to ON. (p. 76) • There is no title in the tape. → Superimpose the titles. (p. 68) • The tape has a blank portion in the recorded portion. (p. 49)

(continued on the following page)

Symptom	Cause and/or Corrective Actions
Displaying the recorded date, date search function does not work.	• The tape has no cassette memory. ➔ Use a tape with cassette memory. (p. 50, 114) • CM SEARCH is set to OFF in the menu settings. ➔ Set it to ON. (p. 76) • The tape has a blank portion in the recorded portion. (p. 51)
The new sound added to the recorded tape is not heard.	• AUDIO MIX is set to ST1 side in the menu settings. ➔ Adjust AUDIO MIX. (p. 76)
The title is not displayed.	• TITLE DSPL is set to OFF in the menu settings. ➔ Set it to ON. (p. 76)
The sound is muted or images do not appear when monitoring images through TV.	➔ Pull out the A/V connecting cable from the AUDIO/VIDEO jack, then connect it again.

In the recording and playback modes

Symptom	Cause and/or Corrective Actions
The power does not turn on.	• The battery pack is not installed, or is dead or nearly dead. ➔ Install a charged battery pack. (p. 10, 11) • The AC power adaptor is not connected to a wall outlet. ➔ Connect the AC power adaptor to a wall outlet. (p. 13)
The end search function does not work.	• The tape was ejected after recording when using a tape without cassette memory. (p. 24, 28) • You have not recorded on the new cassette yet. (p. 24, 28)
The end search function does not work correctly.	• The tape has a blank portion in the beginning or middle. (p. 24)
The picture does not appear in the viewfinder.	• The LCD panel is open. ➔ Close the LCD panel. (p. 16)
The battery pack is quickly discharged.	• The operating temperature is too low. • The battery pack is not fully charged. ➔ Charge the battery pack fully. (p. 11) • The battery pack is completely dead, and cannot be recharged. ➔ Replace with a new battery pack. (p. 10)
The battery remaining indicator does not indicate the correct time.	• You have used the battery pack in an extremely hot or cold environment for a long time. • The battery pack is completely dead, and cannot be recharged. ➔ Replace with a new battery pack. (p. 10) • The battery is dead. ➔ Use a full-charged battery pack. (p. 10, 11)

Symptom	Cause and/or Corrective Actions
The cassette cannot be removed from the holder.	• The power source is disconnected. → Connect it firmly. (p. 10, 13) • The battery is dead. → Use a charged battery pack. (p. 10, 11)
The ⬇ and ⏏ indicators flash and no functions except for cassette ejection work.	• Moisture condensation has occurred. → Remove the cassette and leave your camcorder for at least one hour to acclimatize. (p. 126)
CM indicator does not appear when using a tape with cassette memory.	• The gold-plated connector of the tape is dirty or dusty. → Clean the gold-plated connector. (p. 115)
Remaining tape indicator is not displayed.	• The REMAIN is set to AUTO in the menu settings. → Set it to ON to always display the remaining tape indicator. (p. 76)

When operating using the "Memory Stick"

Symptom	Cause and/or Corrective Actions
Recording does not function.	• The "Memory Stick" has already been recorded to its full capacity. → Erase unnecessary images and record again. (p. 91, 110) • The "Memory Stick" formatted incorrectly is inserted. → Format the "Memory Stick" or use another "Memory Stick." (p. 79) • The write-protect tab on the "Memory Stick" is set to LOCK. → Set the tab to write. (p. 84) • The "Memory Stick" is not inserted. → Insert a "Memory Stick." (p. 86)
The image cannot be deleted.	• The image is protected. → Cancel image protection. (p. 109) • The write-protect tab on the "Memory Stick" is set to LOCK. → Set the tab to write. (p. 84)
You cannot format the "Memory Stick." Deleting all the images cannot be carried out.	• The write-protect tab on the "Memory Stick" is set to LOCK. → Set the tab to write. (p. 84)
You cannot protect the image.	• The write-protect tab on the "Memory Stick" is set to LOCK. → Set the tab to write. (p. 84) • The image to be protected is not being played back. → Press MEMORY PLAY to play back the image. (p. 103)
You cannot write a print mark on the still image.	• The write-protect tab on the "Memory Stick" is set to LOCK. → Set the tab to write. (p. 84) • The image that you will write a print mark is not being played back. → Press MEMORY PLAY to play back the image. (p. 103)

(continued on the following page)

Symptom	Cause and/or Corrective Actions
The photo save function does not work.	• The write-protect tab on the “Memory Stick” is set to LOCK. ➔ Set the tab to write. (p. 84) • The battery pack is dead. ➔ Install a charged battery pack or use the AC power adaptor instead of the battery pack. (p. 10, 13)

Others

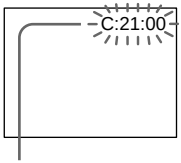
Symptom	Cause and/or Corrective Actions
The title is not recorded.	• The tape has no cassette memory. ➔ Use a tape with cassette memory. (p. 68, 114) • The cassette memory is full. ➔ Erase another title. (p. 71) • The tape is set to prevent accidental erasure. ➔ Slide the write-protect tab so that red portion is not visible. (p. 14) • Nothing is recorded in that position on the tape. ➔ Superimpose the title to the recorded position. (p. 68)
The cassette label is not recorded.	• The tape has no cassette memory. ➔ Use a tape with cassette memory. (p. 74, 114) • The cassette memory is full. ➔ Erase some titles. (p. 71) • The tape is set to prevent accidental erasure. ➔ Slide the write-protect tab so that red portion is not visible. (p. 14)
While editing using the i.LINK cable (DV connecting cable), recording picture cannot be monitored.	• Disconnect the i.LINK cable (DV connecting cable), and connect it again.
DV synchro-editing does not function.	• The input selector on the VCR is not set correctly. ➔ Set the selector to DV input position. If you use another DV camcorder, set the power switch to VTR. • The camcorder is connected to DV equipment of other than Sony. ➔ Operate normal editing. • Setting program on a blank portion of the tape is attempted. ➔ Set the program again on a recorded portion.

Symptom	Cause and/or Corrective Actions
The Remote Commander supplied with your camcorder does not work.	• COMMANDER is set to OFF in the menu settings. → Set it to ON. (p. 76) • Something is blocking the infrared rays. → Remove the obstacle. • The batteries are inserted in the battery holder with the + – polarities incorrectly matching the + – marks. → Insert the batteries with the correct polarity. (p. 137) • The batteries are dead. → Insert new ones. (p. 137)
The picture from a TV or VCR does not appear even when your camcorder is connected to outputs on the TV or VCR.	• DISPLAY is set to V-OUT/LCD in the menu settings. → Set it to LCD. (p. 76)
The melody or beep sounds for five seconds.	• Moisture condensation has occurred. → Remove the cassette and leave your camcorder for at least one hour to acclimatize. (p. 126) • Some troubles have occurred in your camcorder. → Remove the cassette and insert it again, then operate your camcorder.
You cannot charge the battery pack.	• The POWER switch is not set to OFF. → Set it to OFF.
When charging the battery pack, the CHARGE lamp does not light.	• Charging has been completed. • The battery pack is not properly installed. → Install it properly.
While charging the battery pack, the CHARGE lamp flashes.	• The battery pack is not properly installed. → Install it properly. • The AC power adaptor is disconnected. → Connect it properly. • The battery pack malfunctions. → Contact your Sony dealer.
The camcorder is immediately turned off even if the amount of the battery remaining time is enough to operate.	→ Charge the battery pack fully again. The correct remaining time is displayed.
No function works though the power is on.	• Disconnect the power cord of the AC power adaptor or remove the battery, then reconnect it after about one minute. Turn the power on. If the functions still do not work, press the RESET button below the START/STOP MODE switch using a sharp-pointed object. (If you press the RESET button, all the settings including the date and time return to the default.) (p. 13, 134)
When you shake the camcorder after the POWER switch is set to VTR or OFF, the clacking sound is heard from the camcorder.	• This is due to adopt the linear-mechanism. This is not a malfunction.

Self-diagnosis display

Your camcorder has a self-diagnosis display function.
This function displays the current condition of your camcorder as a 5-digit code (a combination of a letter and figures) on the LCD screen or in the viewfinder. If a 5-digit code is displayed, check the following code chart. The last two digits (indicated by □□) will differ depending on the state of your camcorder.

Viewfinder (or LCD screen)



Self-diagnosis display

- C:□□:□□
  You can service your camcorder yourself.
- E:□□:□□
  Contact your Sony dealer.

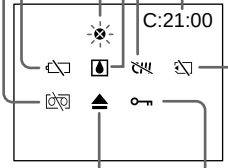
Five-digit display	Cause and/or Corrective Actions
C:04:□□	• You are using a battery pack that is not an "InfoLITHIUM" battery pack. ➔ Use an "InfoLITHIUM" battery pack. (p. 11)
C:21:□□	• Moisture condensation has occurred. ➔ Remove the cassette and leave your camcorder for at least one hour to acclimatize. (p. 126)
C:22:□□	• The video heads are dirty. ➔ Clean the heads using the Sony DVM12CL cleaning cassette (not supplied). (p. 127)
C:31:□□ C:32:□□	• A malfunction other than the above that you can service has occurred. ➔ Remove the cassette and insert it again, then operate your camcorder. ➔ Disconnect the power cord of the AC power adaptor or remove the battery pack. After reconnecting the power source, operate your camcorder.
E:61:□□ E:62:□□	• A malfunction that you cannot service has occurred. ➔ Contact your Sony dealer and inform them of the 5-digit code. (example: E:61:10)

If you are unable to rectify the problem even if you try corrective actions a few times, contact your Sony dealer.

Warning indicators and messages

If indicators and messages appear on the LCD screen or in the viewfinder, check the following:
See the page in parentheses "( )" for more information.

Warning indicators



The video heads are dirty
Slow flashing:
• You need to clean the heads using the Sony DVM12CL cleaning cassette (not supplied) (p. 127).

The battery is dead or nearly dead
Slow flashing:
• The battery is nearly dead.

Fast flashing:
• The battery is dead (p. 11).
Depending on conditions, the indicator may flash, even if there are five to 10 minutes remaining.

Warning indicator as to tape
Slow flashing:
• The tape is near the end.
• No tape is inserted (p. 14).*
• The write-protect tab on the cassette is out (red) (p. 14).*

Fast flashing:
• The tape has run out (p. 28).*

You need to eject the cassette
Slow flashing:
• The write-protect tab on the cassette is out (red) (p. 14).*

Fast flashing:
• Moisture condensation has occurred (p. 126).*
• The tape has run out (p. 28).*
• The self-diagnosis display function is activated (p. 122).*

Moisture condensation has occurred*
Fast flashing:
• Eject the cassette, turn off your camcorder, and leave it for about one hour with the cassette compartment open (p. 126).

Warning indicator as to cassette memory
Slow flashing:
• No tape with cassette memory is inserted (p. 114).*

Self-diagnosis display (p. 122)

Warning indicator as to "Memory Stick"
Slow flashing:
• No "Memory Stick" is inserted (p. 86).

Fast flashing:
• "Memory Stick" is not formatted correctly (p. 79).*

The still image is protected
Slow flashing:
• The still image is protected (p. 109).*

Warning messages

- CLOCK SET — Reset the date and time (p. 83).
- FOR “InfoLITHIUM” BATTERY ONLY — Use an “InfoLITHIUM” battery pack (p. 11).
- MEMORY FULL — The “Memory Stick” is full in photo save function (p. 102).
- CLEANING CASSETTE — The video heads are dirty (p. 127).
- FULL — The tape cassette memory is full (p. 70).*
- 16BIT — AUDIO MODE is set to 16BIT.* You cannot dub new sound (p. 80).
- REC MODE — REC MODE is set to LP.* You cannot dub new sound (p. 80).
- TAPE — There is no recorded portion on the tape.* You cannot dub new sound (p. 67).
- “i.LINK” CABLE — i.LINK cable is connected (p. 67).* You cannot dub new sound.
- FULL — The “Memory Stick” is full (p. 93).*
- — The write-protect tab on the “Memory Stick” is set to LOCK (p. 84).*
- NO FILE — No still image is recorded on the “Memory Stick” (p. 103).*
- NO MEMORY STICK — No “Memory Stick” is inserted (p. 86).
- COPY INHIBIT — The tape contains copyright control signals for copyright protection of software (p. 114).*
- TAPE END — The tape has reached the end of the tape (p. 28).*
- NO TAPE — Insert a cassette tape (p. 14).*

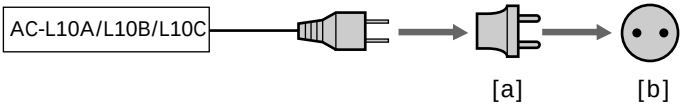
* You hear the melody or beep sound.

Using your camcorder abroad

Using your camcorder abroad

You can use your camcorder in any country or area with the AC power adaptor supplied with your camcorder within 100 V to 240 V AC, 50/60 Hz.

When charging the battery pack, use a commercially available AC plug adaptor [a], if necessary, depending on the design of the wall outlet [b].



Your camcorder is an NTSC system based camcorder. If you want to view the playback picture on a TV, it must be an NTSC system based TV with the AUDIO/VIDEO input jack.
The following shows TV color systems used overseas.

NTSC system
Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

PAL system
Australia, Austria, Belgium, China, Czech Republic, Denmark, Finland, Germany, Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Slovak Republic, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system
Brazil

PAL-N system
Argentina, Paraguay, Uruguay

SECAM system
Bulgaria, France, Guyana, Hungary, Iran, Iraq, Monaco, Poland, Russia, Ukraine, etc.

Simple setting of clock by time difference

You can easily set the clock to the local time by setting a time difference. Select WORLD TIME in the menu settings. See page 76 for more information.

Maintenance information and precautions

Moisture condensation

If your camcorder is brought directly from a cold place to a warm place, moisture may condense inside your camcorder, on the surface of the tape, or on the lens. In this condition, the tape may stick to the head drum and be damaged or your camcorder may not operate correctly. If there is moisture inside your camcorder, the beep sounds and the 💧 indicator flashes. When the ⏏ indicator flashes at the same time, the cassette is inserted in your camcorder. If moisture condenses on the lens, the indicator will not appear.

If moisture condensation occurred

None of the functions except cassette ejection will work. Eject the cassette, turn off your camcorder, and leave it for about one hour with the cassette compartment open. Your camcorder can be used again if the 💧 indicator does not appear when the power is turned on again.

Note on moisture condensation

Moisture may condense when you bring your camcorder from a cold place into a warm place (or vice versa) or when you use your camcorder in a hot place as follows:

- You bring your camcorder from a ski slope into a place warmed up by a heating device.
- You bring your camcorder from an air-conditioned car or room into a hot place outside.
- You use your camcorder after a squall or a shower.
- You use your camcorder in a high temperature and humidity place.

How to prevent moisture condensation

When you bring your camcorder from a cold place into a warm place, put your camcorder in a plastic bag and tightly seal it. Remove the bag when the air temperature inside the plastic bag has reached the surrounding temperature (after about one hour).

Maintenance information

Cleaning the video head

To ensure normal recording and clear pictures, clean the video heads. The video head may be dirty when:

- mosaic-pattern noise appears on the playback picture.
- playback pictures do not move.
- playback pictures do not appear.
- the ⊗ indicator and "CLEANING CASSETTE" message appear one after another or the ⊗ indicator flashes on the LCD screen or in the viewfinder.

If the above problem, [a] or [b] occurs, clean the video heads for 10 seconds with the Sony DVM12CL cleaning cassette (not supplied). Check the picture and if the above problem persists, repeat cleaning.

Cleaning the LCD screen

If fingerprints or dust make the LCD screen dirty, we recommend using a LCD Cleaning Cloth (not supplied) to clean the LCD screen.

Charging the vanadium-lithium battery in your camcorder

Your camcorder is supplied with a vanadium-lithium battery installed so as to retain the date and time, etc., regardless of the setting of the POWER switch. The vanadium-lithium battery is always charged as long as you are using your camcorder. The battery, however, will get discharged gradually if you do not use your camcorder. It will be completely discharged in about six months if you do not use your camcorder at all. Even if the vanadium-lithium battery is not charged, it will not affect the camcorder operation. To retain the date and time, etc., charge the battery if the battery is discharged.

Charging the vanadium-lithium battery:

- Connect your camcorder to house current using the AC power adaptor supplied with your camcorder, and leave your camcorder with the POWER switch turned off for more than 24 hours.
- Or install the fully charged battery pack in your camcorder, and leave your camcorder with the POWER switch turned off for more than 24 hours.

Precautions

Camcorder operation

- Operate your camcorder on 7.2 V (battery pack) or 8.4 V (AC power adaptor).
- For DC or AC operation, use the accessories recommended in this operating instructions.
- If any solid object or liquid get inside the casing, unplug your camcorder and have it checked by a Sony dealer before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch set to OFF when you are not using your camcorder.
- Do not wrap your camcorder with a towel, for example, and operate it. Doing so might cause heat to build up inside.
- Keep your camcorder away from strong magnetic fields or mechanical vibration.
- Do not touch the LCD screen with a sharp-pointed object.
- If your camcorder is used in a cold place, a residual image may appear on the LCD screen. This is not a malfunction.
- While using your camcorder, the back of the LCD screen may heat up. This is not a malfunction.

On handling tapes

- Do not insert anything into the small holes on the rear of the cassette. These holes are used to sense the type and thickness of the tape and if the recording tab is in or out.
- Do not open the tape protect cover or touch the tape.
- Avoid touching or damaging the terminals. To remove dust, clean the terminals with a soft cloth.

Camcorder care

- Remove the tape, and periodically turn on the power, operate the CAMERA and VTR sections and play back a tape for about three minutes when your camcorder is not to be used for a long time.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on the lens, remove them with a soft cloth.
- Clean the camcorder body with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.
- Do not let sand get into your camcorder. When you use your camcorder on a sandy beach or in a dusty place, protect it from the sand or dust. Sand or dust may cause your camcorder to malfunction, and sometimes this malfunction cannot be repaired.

AC power adaptor

- Unplug the unit from the wall outlet when you are not using the unit for a long time. To disconnect the power cord, pull it out by the plug. Never pull the power cord itself.
- Do not operate the unit with a damaged cord or if the unit has been dropped or damaged.
- Do not bend the power cord forcibly, or place a heavy object on it. This will damage the cord and may cause fire or electrical shock.
- Prevent metallic objects from coming into contact with the metal parts of the connecting section. If this happens, a short may occur and the unit may be damaged.
- Always keep metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment. AM receivers and video equipment disturb AM reception and video operation.

- The unit becomes warm during use. This is not a malfunction.
- Do not place the unit in locations that are:
  – Extremely hot or cold
  – Dusty or dirty
  – Very humid
  – Vibrating

Battery pack

- Use only the specified charger or video equipment with the charging function.
- To prevent accident from a short circuit, do not allow metal objects to come into contact with the battery terminals.
- Keep the battery pack away from fire.
- Never expose the battery pack to temperatures above 140°F (60°C), such as in a car parked in the sun or under direct sunlight.
- Keep the battery pack dry.
- Do not expose the battery pack to any mechanical shock.
- Do not disassemble nor modify the battery pack.
- Attach the battery pack to video equipment securely.
- Charging while some capacity remains does not affect the original battery capacity.
- The battery pack is not resistant to water. Do not wet the battery pack.
- Unless you use the battery pack for a long period, store the battery pack after you charge it fully and use it completely once a year.
- Store the battery pack in a cool, dry place.

Notes on dry batteries

To avoid possible damage from battery leakage or corrosion, observe the following:

- Be sure to insert the batteries with the + – polarities matched to the + – marks.
- Dry batteries are not rechargeable.
- Do not use a combination of new and old batteries.
- Do not use different types of batteries.
- Current flows from batteries when you are not using them for a long time.
- Do not use leaking batteries.

If batteries are leaking

- Wipe off the liquid in the battery compartment carefully before replacing the batteries.
- If you touch the liquid, wash it off with water.
- If the liquid get into your eyes, wash your eyes with a lot of water and then consult a doctor.

If any problem occurs, unplug your camcorder and contact your nearest Sony dealer.

Specifications

Video camera recorder

System

Video recording system
2 rotary heads
Helical scanning system
Audio recording system
Rotary heads, PCM system
Quantization: 12 bits (Fs 32 kHz, stereo 1, stereo 2), 16 bits (Fs 48 kHz, stereo)
Video signal
NTSC color, EIA standards
Usable cassette
Mini DV cassette with the Mini DV mark printed
Tape speed
SP: Approx. 18.81 mm/s
LP: Approx. 12.56 mm/s
Recording/playback time (using cassette DVM60)
SP: 1 hour
LP: 1.5 hours
Fast-forward/rewind time (using cassette DVM60)
Approx. 1 min. and 50 seconds (using the AC power adaptor)
Approx. 2 min. and 30 seconds (using the battery pack)
Viewfinder
Electric viewfinder (color)
Image device
1/4 inch CCD (Charge Coupled Device)
Approx. 1,070,000 pixels (Effective: Moving image: Approx. 690,000 pixels, Still image: Approx. 1,000,000 pixels)
Lens
Carl Zeiss
Combined power zoom lens
Filter diameter 1 1/2 in. (37 mm.)
10× (Optical), 120× (Digital)
Focal length
3/16 - 1 11/16 in. (4.2 - 42 mm)
When converted to a 35 mm still camera
Camera mode: 1 15/16 - 19 in. (48 - 480 mm)
Memory mode: 1 5/8 - 15 3/4 in. (40 - 400 mm)
Color temperature
Auto, HOLD (Hold), Indoor (3200K), Outdoor (5800K)
Minimum illumination
7 lux (F 1.8)
0 lux (in the NightShot mode)*
* Objects unable to be seen due to the dark can be shot with infrared lighting.

Input/Output connectors

S video input/output
Input/output auto switch
4-pin mini DIN
Luminance signal: 1 Vp-p, 75 ohms, unbalanced
Chrominance signal: 0.286 Vp-p, 75 ohms, unbalanced
Audio/Video input/output
Input/output auto switch
AV MINI JACK, 1 Vp-p, 75 ohms, unbalanced, sync negative
327 mV, (at output impedance more than 47 kilohms)
Output impedance with less than 2.2 kilohms/Stereo minijack (ø 3.5mm)
Input impedance more than 47 kilohms
DV input/output
4-pin connector
Headphones jack
Stereo minijack (ø 3.5 mm)
LANC control jack
Stereo mini-minijack (ø 2.5 mm)
MIC jack
Minijack, 0.388 mV low impedance with 2.5 to 3.0 V DC, output impedance 6.8 kilohms (ø 3.5 mm)
Stereo type

LCD screen

Picture
2.5 inches measured diagonally
2 × 1 1/2 in. (50 × 37 mm)
Total dot number
200,640 (880 × 228)

General

Power requirements
7.2 V (battery pack)
8.4 V (AC power adaptor)
Average power consumption (when using the battery pack)
During camera recording using LCD
4.4 W
Viewfinder
3.9 W
Operating temperature
32 °F to 104 °F (0 °C to 40 °C)
Storage temperature
–4 °F to +140 °F (–20 °C to +60 °C)
Dimensions (approx.)
2 1/2 × 5 × 4 7/8 in.
(61 × 127 × 123 mm) (w/h/d)
Mass (approx.)
1 lb 3 oz (550 g)
main unit only
1 lb 7 oz (650 g)
including the battery pack, NP-FM50, cassette DVM60 and lens cap

Supplied accessories
See page 5.

AC power adaptor

Power requirements
100 - 240 V AC, 50/60 Hz
Power consumption
23 W
Output voltage
DC OUT: 8.4 V, 1.5 A in the operating mode
Operating temperature
32 °F to 104 °F (0 °C to 40 °C)
Storage temperature
–4 °F to +140 °F (–20 °C to +60 °C)
Dimensions (approx.)
5 × 1 9/16 × 2 1/2 in.
(125 × 39 × 62 mm) (w/h/d)
excluding projecting parts
Mass (approx.)
9.8 oz (280 g)
excluding power cord
Cord length (approx.)
Power cord: 6.6 feet (2 m)
Connecting cord: 5.2 feet (1.6 m)

Battery pack

Output voltage
DC 7.2 V
Capacity
8.5 Wh
Dimensions (approx.)
1 9/16 × 13/16 × 2 1/4 in.
(38.2 × 20.5 × 55.6 mm) (w/h/d)
Mass (approx.)
2.7 oz (76 g)
Type
Lithium ion

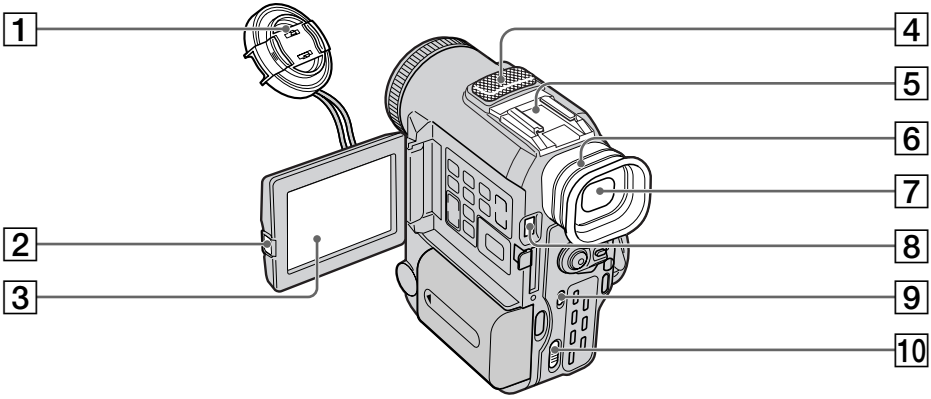
"Memory Stick"

Memory
Flash memory
4MB: MSA-4A
Operating voltage
2.7 V -3.6 V
Power consumption
Approx. 45 mA in the operating mode
Approx. 130 µA in the standby mode
Dimensions (approx.)
2 × 1/8 × 7/8 in.
(50 × 2.8 × 21.5 mm) (w/h/d)
Mass (approx.)
0.14 oz (4 g)

Design and specifications are subject to change without notice.

Identifying the parts and controls

Camcorder



1 Lens cap (p. 15)
2 OPEN button (p. 16, 25)
3 LCD screen (p. 16)
4 Microphone (p. 65)
5 Intelligent accessory shoe (p. 64)
6 Eyecup
7 Viewfinder (p. 18)
8 MEMORY RELEASE button (p. 86)
9 FADER button (p. 36)
10 OPEN/⏏EJECT lever (p. 14)

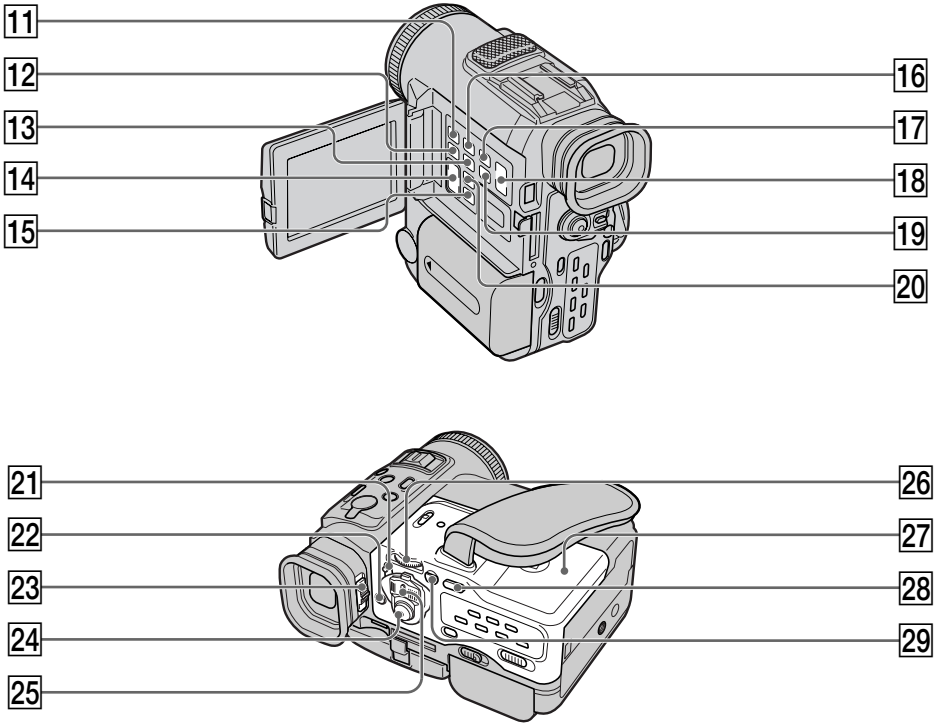
This mark indicates that this product is a genuine accessory for Sony video products.
When purchasing Sony video products, Sony recommends that you purchase accessories with this “GENUINE VIDEO ACCESSORIES” mark.

These are trademarks.

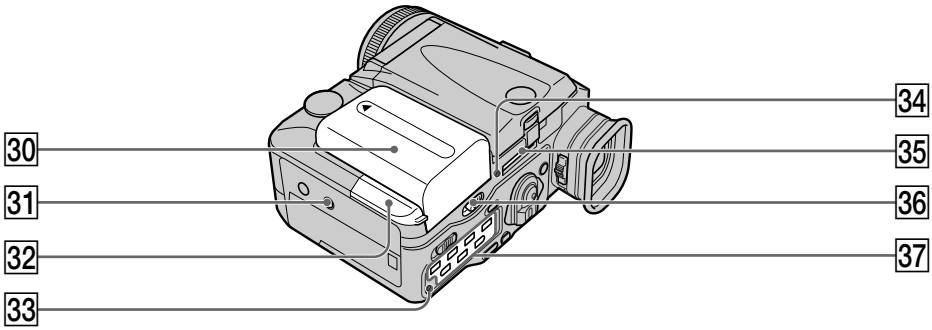
Intelligent Accessory Shoe

Notes on the intelligent accessory shoe

- The intelligent accessory shoe supplies power to optional accessories such as a video light or microphone.
- The intelligent accessory shoe is linked to the POWER switch, allowing you to turn the power supplied by the shoe on and off. Refer to the operating instructions of the accessory for further information.
- The intelligent accessory shoe has a safety device for fixing the installed accessory securely. To connect an accessory, press down and push it to the end, and then tighten the screw.
- To remove an accessory, loosen the screw, and then press down and pull out the accessory.



11 MEMORY PLAY button (p. 96)
12 END SEARCH button (p. 24)
13 DIGITAL EFFECT button (p. 40)
14 VOLUME buttons (p. 25)
15 TITLE button (p. 68)
16 MEMORY INDEX button (p. 104)
17 MEMORY DELETE button (p. 110)
18 MEMORY +/– buttons (p. 96, 103)
19 DISPLAY button (p. 26)
20 MENU button (p. 76)
21 LOCK switch (p. 16)
22 ⏲ (self-timer) button (p. 23, 32, 94)
23 Viewfinder lens adjustment lever (p. 18)
24 START/STOP button (p. 15)
25 POWER switch (p. 15)
26 SEL/PUSH EXEC dial (p. 76)
27 Cassette lid (p. 14)
28 BACK LIGHT button (p. 21)
29 EXPOSURE button (p. 44)



30 Battery pack/Battery terminal cover (p. 10)

31 Tripod receptacle
Make sure that the length of the tripod screw is less than 9/32 inch (6.5 mm). Otherwise, you cannot attach the tripod securely and the screw may damage your camcorder.

32 DC IN jack cover (p. 11)

33 CHARGE lamp (p. 11)

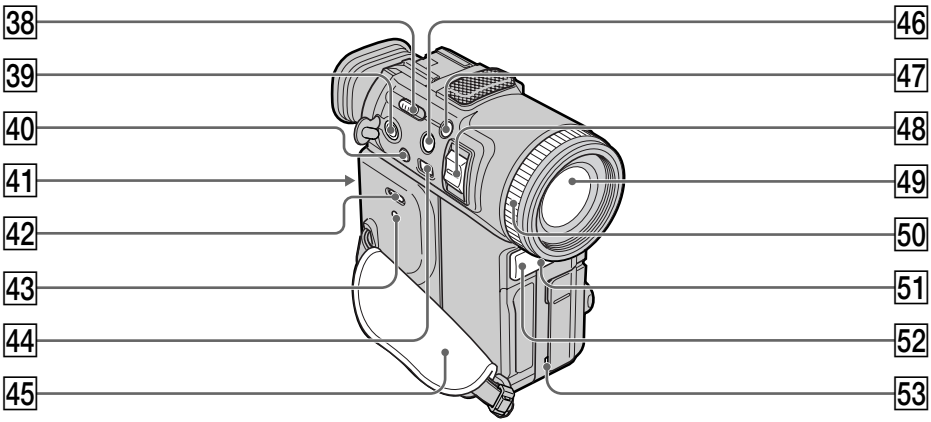
34 Access lamp (p. 86)

35 "Memory Stick" slot (p. 86)

36 BATT (battery) RELEASE lever (p. 10)

37 Video control buttons (p. 25, 28, 57)

■ STOP (stop)
◄◄ REW (rewind)
► PLAY (playback)
►► FF (Fast-forward)
❚❚ PAUSE (pause)
● REC (recording)
The control buttons light up when you set the POWER switch to VTR.



38 NIGHTSHOT switch (p. 22)

39 MIC jack (PLUG IN POWER) (p. 64)
Connect an external microphone (not supplied). This jack also accepts a "plug-in-power" microphone.

40 LASER LINK button (p. 30)

41 Cassette compartment (p. 14)

42 START/STOP MODE switch (p. 20)

43 RESET button (p. 121)

44 FOCUS button (p. 45)

45 Grip strap

46 PHOTO button (p. 31, 91)

47 +SLOW SHTR button (p. 22)

48 Power zoom lever (p. 19)

49 Lens

50 Focus ring (p. 45)

51 Infrared rays emitter (p. 22, 30)

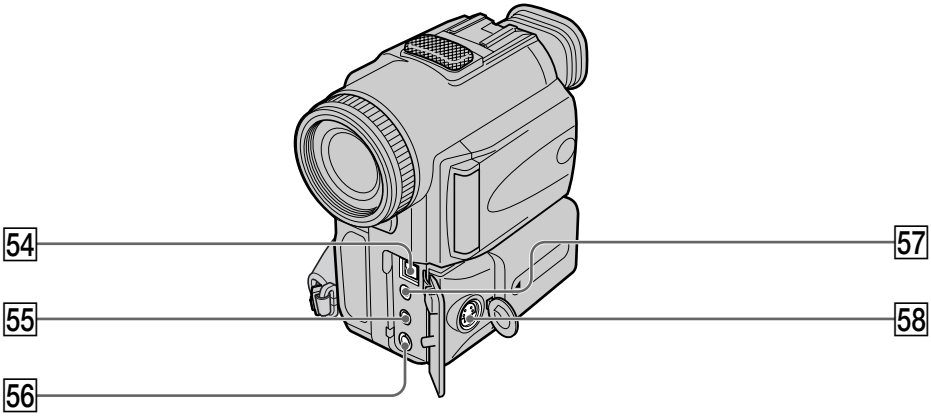
52 Remote sensor

53 Camera recording lamp (p. 15)

Note on the Carl Zeiss lens
Your camcorder is equipped with a Carl Zeiss lens which can reproduce a fine image.
The lens for your camcorder was developed jointly by Carl Zeiss, in Germany, and Sony Corporation. It adopts the MTF* measurement system for video camera and offers a quality as the Carl Zeiss lens.

* MTF is an abbreviation of Modulation Transfer Function / Factor.
The value number indicates the amount of light of a subject penetrating into the lens.

What is LASER LINK?
The LASER LINK system sends and receives pictures and sound between video equipment having the mark by using infrared rays.



54 i DV IN/OUT jack (p. 55, 60, 100)
This "i.LINK" mark is a trademark of Sony Corporation and indicates that this product is in agreement with IEEE 1394-1995 specifications and their revisions.

The i DV IN / OUT jack is i.LINK compatible.

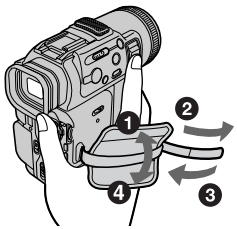
55 🎧 (headphones) jack

56 AUDIO/VIDEO jack (p. 29, 33, 54, 58, 65, 99)

57 LANC jack

58 S VIDEO jack (p. 29, 33, 55, 59)

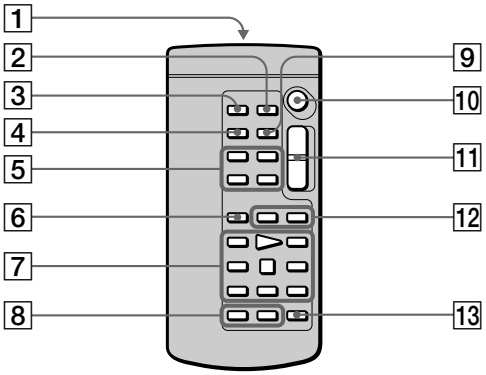
Fastening the grip strap



Fasten the grip strap firmly.

Remote Commander

The buttons that have the same name on the Remote Commander as on your camcorder function identically to the buttons on your camcorder.



1 Transmitter
Point toward the remote sensor to control your camcorder after turning on your camcorder.

2 ZERO SET MEMORY button (p. 48)

3 PHOTO button (p. 31, 91)

4 DISPLAY button (p. 26)

5 Memory control buttons (p. 96, 103)

6 SEARCH MODE button (p. 49, 50, 52)

7 Video control buttons (p. 28)

8 REC button (p. 58)/MARK button (p. 56)

9 DATA CODE button (p. 27)

10 START/STOP button (p. 15)

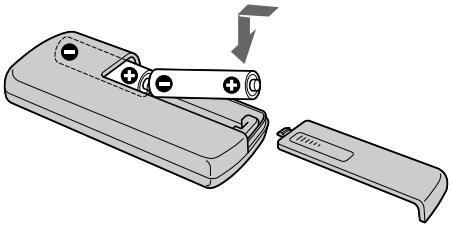
11 Power zoom button (p. 19)

12 ⏮ / ⏭ buttons (p. 49, 50, 52)

13 AUDIO DUB button (p. 66)

To prepare the Remote Commander

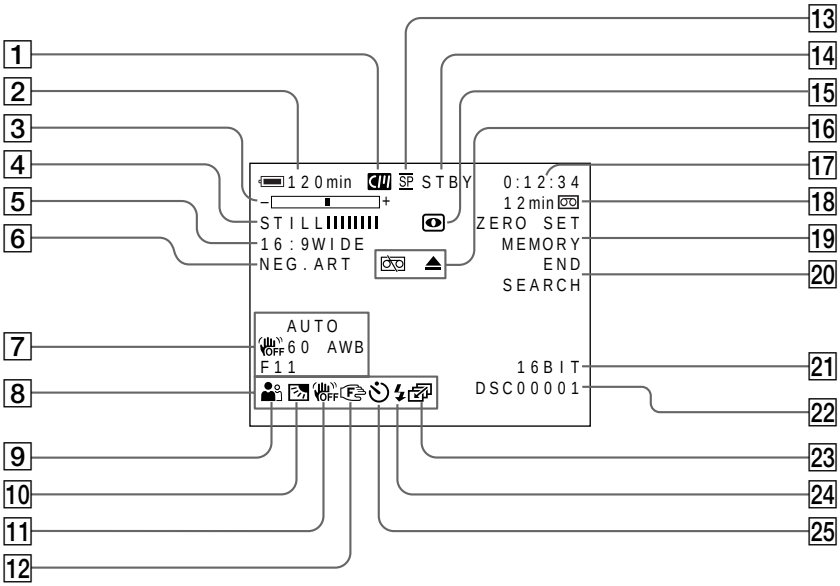
Insert two size AA (R6) batteries by matching the + and – polarities on the batteries to the + – marks inside the battery compartment.



Notes on the Remote Commander

- Point the remote sensor away from strong light sources such as direct sunlight or overhead lighting. Otherwise, the Remote Commander may not function properly.
- Your camcorder works in the commander mode VTR 2. Commander modes 1, 2 and 3 are used to distinguish your camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR in the commander mode VTR 2, we recommend changing the commander mode or covering the sensor of the VCR with black paper.

Operation indicators



1 Cassette memory indicator (p. 114)

2 Remaining battery time indicator (p. 20)

3 Zoom indicator (p. 19)/Exposure indicator (p. 44)/Data file name indicator (p. 84)

4 Digital effect indicator (p. 39)/FADER indicator (p. 36) /MEMORY MIX indicator (p. 95)

5 16:9WIDE indicator (p. 35)

6 Picture effect indicator (p. 38)

7 Data code indicator (p. 27)

8 LCD bright indicator (p. 17)/Volume indicator (p. 25)

9 PROGRAM AE indicator (p. 42)

10 Backlight indicator (p. 21)

11 SteadyShot OFF indicator (p. 77)

12 Manual focus/Infinity indicator (p. 45)

13 Recording mode indicator (p. 80)

14 Standby/Recording indicator (p. 15)/Video control mode indicator (p. 28)/Image size indicator (p. 89)/Image quality mode indicator (p. 87)

15 NIGHTSHOT indicator (p. 22)

16 Warning indicators (p. 123)

17 Tape counter indicator (p. 48)/5SEC mode indicator (p. 20)/Time code indicator (p. 20)/Self-diagnosis indicator (p. 122)/Photo mode indicator (p. 31)/Image number indicator (p. 104)

18 Remaining tape indicator (p. 20)/Memory playback indicator (p. 104)

19 ZERO SET MEMORY indicator (p. 48)

20 END SEARCH indicator (p. 24)

21 Audio mode indicator (p. 80)

22 Data file name indicator
This indicator appears when the MEMORY MIX functions work.

23 Continuous mode indicator (p. 93)

24 Video flash ready indicator
This indicator appears when you use the video flash light (not supplied).

25 Self-timer indicator (p. 23)

Quick Function Guide

Functions to adjust exposure (in the recording mode)

• In a dark place	NIGHTSHOT (p. 22)
• In insufficient light	Low lux mode (p. 42)
• In dark environments such as sunset, fireworks, or general night views	Sunset & moon mode (p. 42)
• Shooting backlit subjects	BACK LIGHT (p. 21)
• In spotlight, such as at the theater or a formal event	Spotlight mode (p. 42)
• In strong light or reflected light, such as at a beach in midsummer or on a ski slope	Beach & ski mode (p. 42)

Functions to give images more impact (in the recording mode)

• Smooth transition between scenes	FADER (p. 36)
• Taking a still picture	PHOTO (p. 31, 91)
• Digital processing of images	PICTURE EFFECT (p. 38) / DIGITAL EFFECT (p. 39)
• Creating a soft background for subjects	Soft portrait mode (p. 42)
• Superimposing a title	TITLE (p. 68)

Functions to give a natural appearance to your recordings (in the recording mode)

• Preventing deterioration of picture quality in digital zoom	D ZOOM [MENU] (p. 76)
• Focusing manually	Manual focus (p. 45)
• Shooting distant subjects	Landscape mode (p. 42)
• Recording fast-moving subjects	Sports lesson mode (p. 42)

Functions to be used in editing (in the recording mode)

• Watching the picture on a wide-screen TV	Wide mode (p. 35)
• Viewing images using a personal computer	“Memory Stick” (p. 84)

Functions to be used after recording (in the playback mode)

• Digital processing of recorded images	PICTURE EFFECT (p. 46) / DIGITAL EFFECT (p. 47)
• Displaying the date / time or various settings when you recorded	Data code (p. 27)
• Quickly locating a desired scene	Zero set memory (p. 48)
• Searching for scenes having a title	Title search (p. 49)
• Searching for scenes recorded in the photo mode	Photo search (p. 52)
• Scanning scenes recorded in the photo mode	Photo scan (p. 53)
• Playing back monaural sound or sub sound	HiFi SOUND [MENU] (p. 76)
• Playing back the picture on a TV without connecting cord	LASER LINK (p. 30)

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